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FEBRUARY, 1906.

$2.00 per year.
$3.00 with Directory.

TEXTILE WORLD RECORD

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ORD & NAGLE COMPANY · Boston & Philadelphia

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The Textile-Finishing Machinery Co.

17 EXCHANGE PLACE, PROVIDENCE, R. I.

Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Callenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application

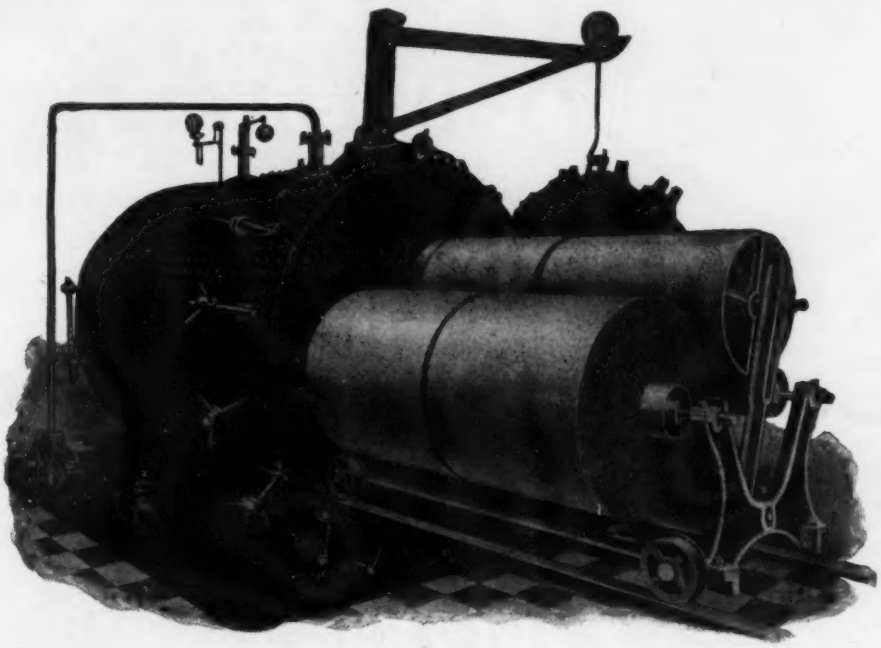
Southern Agent, STUART W. CRAMER, Trust Bldg., Charlotte, N. C., Equitable Bldg., Atlanta, Ga.

Open Bleaching System

OF

JACKSON & HUNT

Patented in the United States, Great Britain and the Continent
U. S. Patent, January 15th, 1901. No. 666,056



H. W. Butterworth & Sons Co.

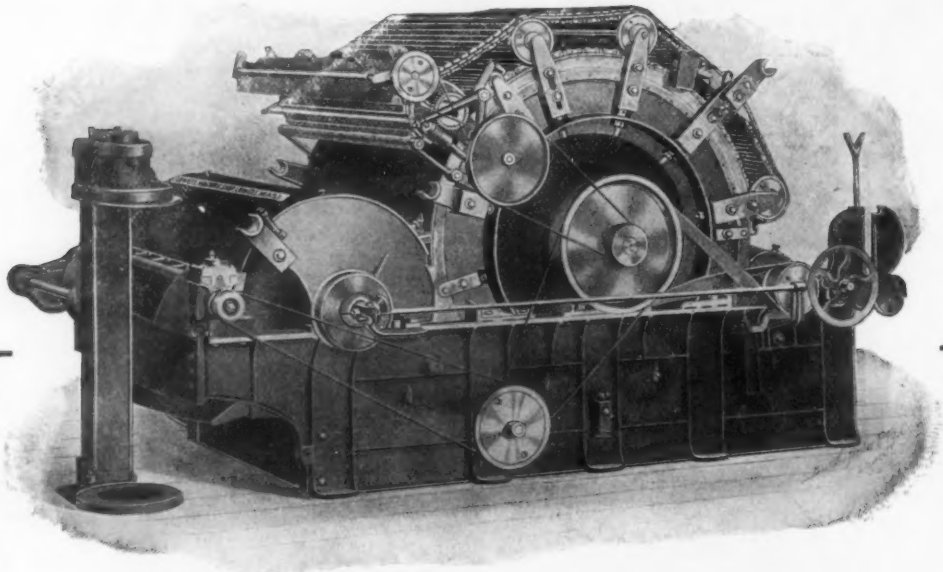
Manufacturers of

Bleaching, Dyeing, Drying and Finishing Machinery

YORK AND CEDAR STREETS

PHILADELPHIA

Sole Makers for the United States



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

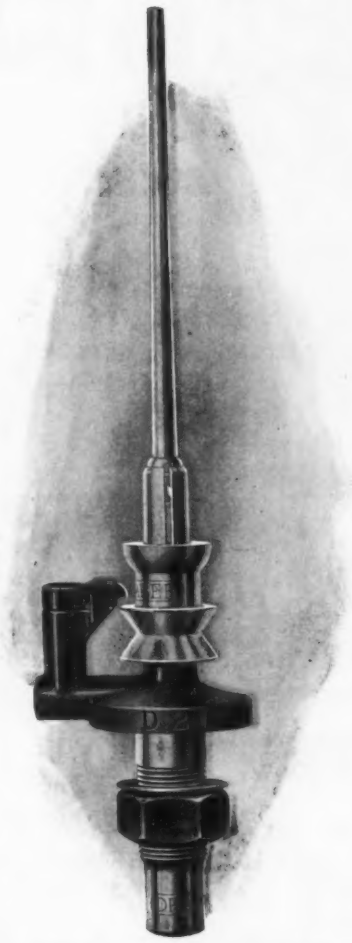
Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.

A New Spindle Improvement



The Rabbeth Centrifugal Bobbin Clutch.

Fits the Bobbin loosely when at rest—allows considerable variation in fit.

Bobbins will all go down into place and Traverse can be lengthened.

Allows easier and quicker doffing — stronger bobbins — less reaming.

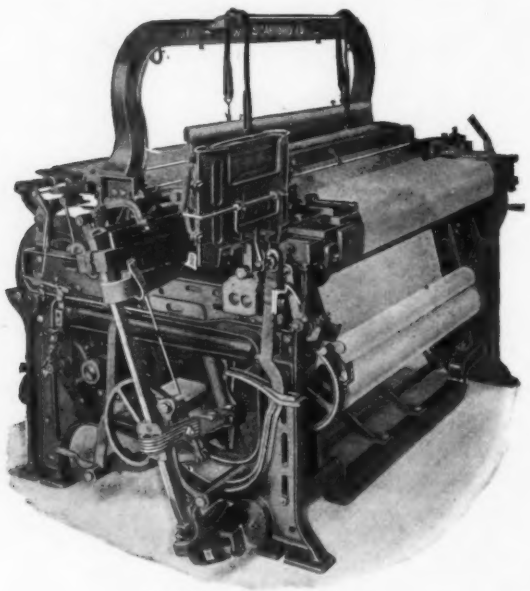
Draper Company, Hopedale, Mass.

We Also Build Looms.

THE GEO. W. STAFFORD COMPANY

WEAVING MACHINERY

READVILLE, MASS.



Ideal Automatic Loom

History Repeats Itself

Our previous successful efforts in the line of improvements in weaving machinery have culminated in our new

IDEAL AUTOMATIC LOOM

Considering quantity of goods produced per weaver, quality of goods, cost of supplies, repair bills, etc., there is no other loom can compare with it for economy of operation.

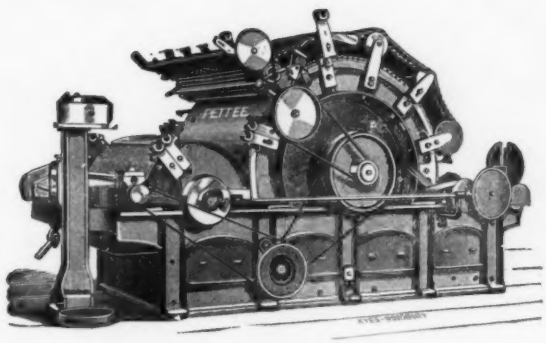
Cop or bobbin filling may be used equally well. One weaver can operate successfully from twelve to thirty looms, and under favorable conditions even more. No reduction in speed. A high grade plain loom as a basis.

Write for further particulars

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



PICKERS,
REVOLVING FLAT CARDS,
DRAWING FRAMES,
RAILWAY HEADS,

SLUBBING,
INTERMEDIATE AND ROVING FRAMES,
SPINNING FRAMES,

SPOOLERS AND REELS.

Shops: { **Biddeford, Me.**
Newton Upper Falls, Mass.

Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

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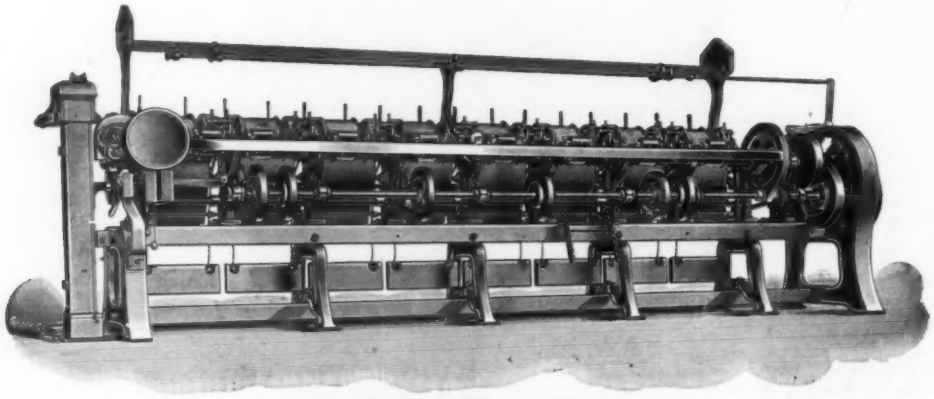


The Whitin 8 Head Comber.

Southern Agent, . . . S. W. CRAMER

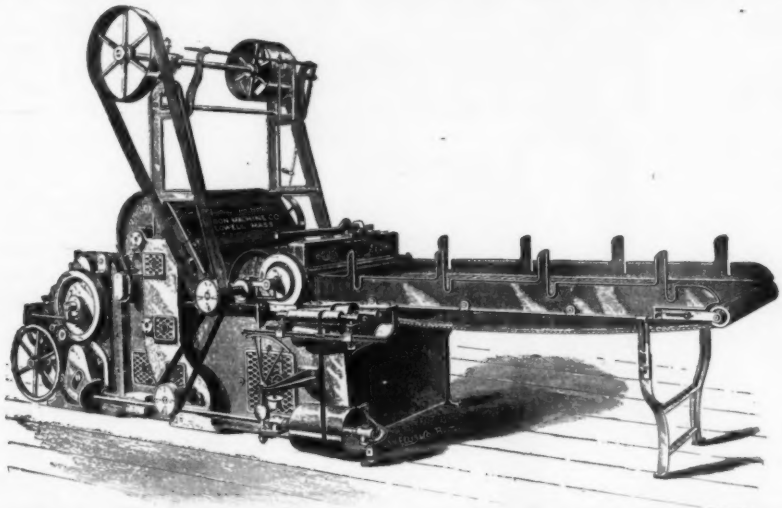
Trust Building, CHARLOTTE, N. C.
and Equitable Bldg, ATLANTA, GA.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines,
Combers,
Railway Heads,
Drawing Frames,

Spinning Frames,
Spoolers,
Twisters,
Reels,
Looms,
Long Chain Quilling Machines.

The Best Pickers

In the Cotton Field nothing equals the DARKY COTTON PICKERS.



In the Cotton Mill nothing equals the KITSON COTTON PICKERS.

KITSON MACHINE CO., LOWELL, MASS.

LARGEST BUILDERS OF COTTON OPENERS AND LAPPERS IN THE WORLD.

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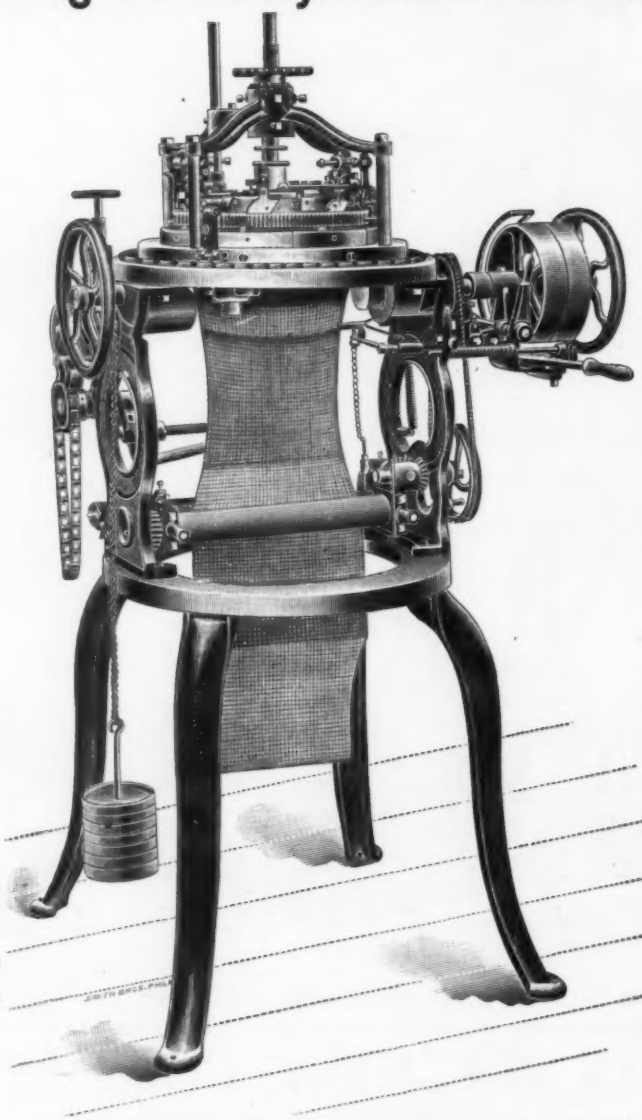
Rib Knitting Machinery for Underwear and Hosiery

The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.



Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

Improved Measuring Device, by actual length knit.

Sizes, 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, four to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters etc.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Antomatic and 7-8 Automatic Seamless Hosiery Machinery.

Full Particulars, Samples and Special Catalogues on Application.

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BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8″ stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery. Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material

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Looms for Worsteds, etc.

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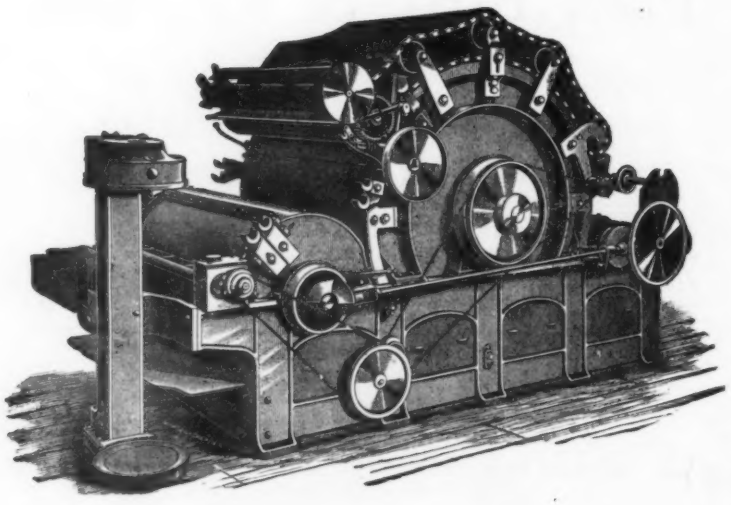
The Best French and English Combing and Rubbing Aprons.
Harding's Pins and Circles, Varey's Fallers, etc.

MASON MACHINE WORKS,

TAUNTON, MASS.

Cotton Machinery



Cards, Combers, Railway Heads,
Drawing Frames, Spinning
Frames, Mules and
Looms,

INCLUDING

Plain and Fancy Silk Looms

Southern Office, Charlotte, S. C.

July, 1905, with a business growth to such an extent that more room is absolutely necessary.

At your service if you will

Call or write and I will

Oblige you with information of details and practical results on

Bobbin and cop winding and other machinery that is manufactured here and

Kept in touch with the requirements

Always producing the work that is correct,

Letting nothing go out

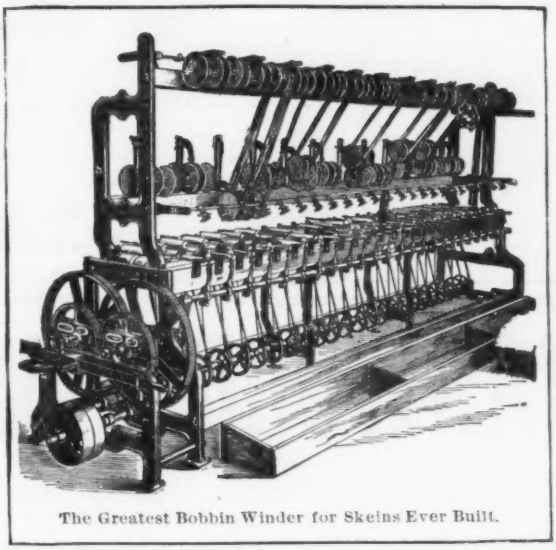
That is not satisfactory before delivery.

Every means are used to

Manufacture winders, spoolers, warpers, beamers and other textile machinery

Up to the standard of reputation

Secured by hard and earnest efforts and guaranted to give results satisfactory in every particular.



The Greatest Bobbin Winder for Skeins Ever Built.

Textile Machinery

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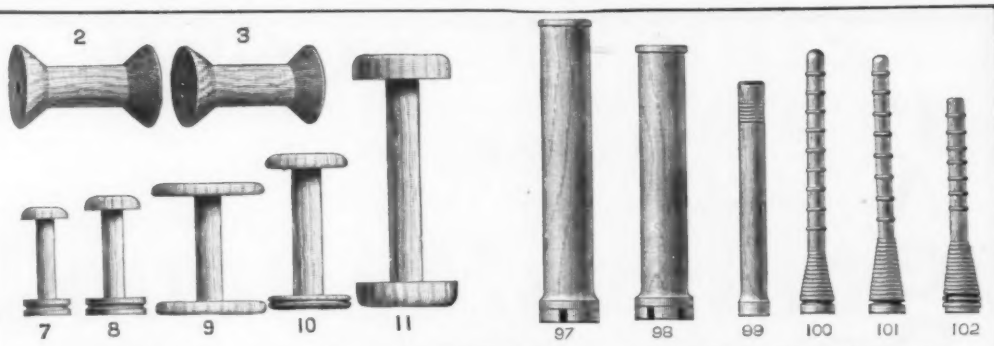
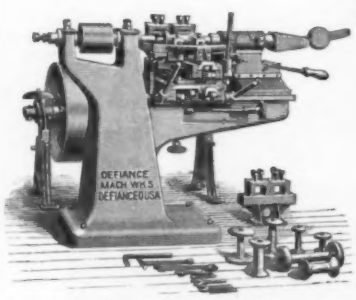
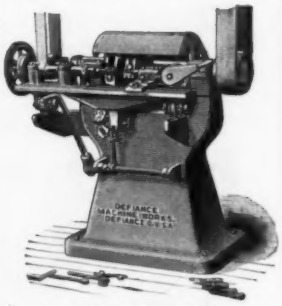


SPOOL AND BOBBIN MACHINERY



AUTOMATIC SPOOL TURNING LATHE

Complete Equipment
OF THE
MOST MODERN TOOLS
25% SAVED
Over the Old Methods
Send for Catalogue and Particulars to
THE
Defiance Machine Works,
DEFIANCE, OHIO



AUTOMATIC BOBBIN LATHE

HARWOOD'S MACHINERY

Increases Production, Improves Quality, Decreases Labor Cost.

The Bramwell Picker Feed

FOR BURR PICKERS, MIXING PICKERS, FEARNAUGHTS AND LUMPERS

We consider our improvements in picker rooms of the utmost importance for up-to-date manufacturers. In fact, wide-awake manufacturers are more and more realizing the wisdom of bringing their stock to the card room in a better state of preparation. Hand feeding is becoming a thing of the past in the picker room as in the card room. The latest ***Bramwell Picker Feed*** is built to handle all kinds of stock in any quantity with evenness and without injury to the staple.

Call on us for particulars and information about all matters relating to Feeding Machinery.

GEORGE S. HARWOOD & SON,

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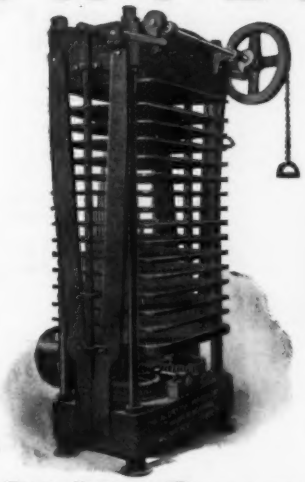
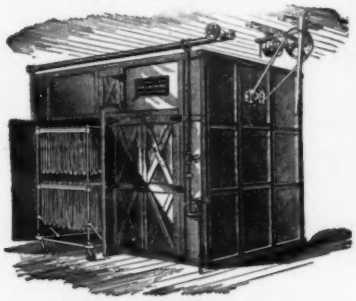


Power Screw, Hydraulic and Lever **Presses**

For Wool, Cotton Stock, Yarn, Stockings, Underwear, Etc.



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BELT-DRIVEN MOTOR-DRIVEN

"Hurricane" Fan, Style No. 3. Write for Catalogues.

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Hope Foundry. LEEDS. England.

MAKERS OF MACHINERY FOR

PREPARING AND SPINNING FLAX, HEMP, TOW AND JUTE

AND OF

Special Machinery for the Manufacture of Twines,

ALSO OF

GOOD'S COMBINED HACKLING AND SPREADING MACHINE,

LONG REACH SCREW-GILL DRAWING FRAMES,

CHAIN-GILL DRAWING FRAMES with Apron Head,

PATENT HIGH-SPEED HORIZONTAL AND AUTOMATIC SPINNING FRAMES FOR MANILLA,

AND OTHER

Special Machinery for the manufacture of Rope Yarns and Binder Twine.

IMPROVED LAYING MACHINES. HASKELL-DAWES TUBING TWISTERS

BROWNELL'S PATENT TWISTING AND LAYING MACHINES FOR TWINE.

Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

FIREPROOF CONCRETE BUILDINGS

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ENGINEERS and CONTRACTORS

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The Best Lubricating and Softening Product

FOR WOOL, COTTON, WOOL AND COTTON MIXED

— IS THE —

EXCELSIOR WOOL OIL COMPOUND

Absolutely free from Mineral Oils, Saponifies Perfectly, Odorless, Pure White and Stainless. Washes out Perfectly and Easily. Great Economy Guaranteed in its Use. Write for samples, prices and full particulars

The EXCELSIOR WOOL OIL COMPOUND CO. - - - - CINCINNATI, OHIO.

DO YOUR **BELT LACING** RIGHT—

GET A **JACKSON**

BELT-LACER

as the best equipped Textile Mills, Cotton Mills and Woolen Mills are doing—it pays to be able to lace a 5" belt in less than 3 minutes at a cost of one cent—larger belts in proportion.— The Jackson Belt Lacer will do it—and do it in such a way that the belt can be connected or disconnected, shortened or lengthened in a few seconds. Catalog.

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Formerly the DIAMOND DRILL & MACHINE CO.

Birdsboro, Pa. and 52 Broadway, New York.

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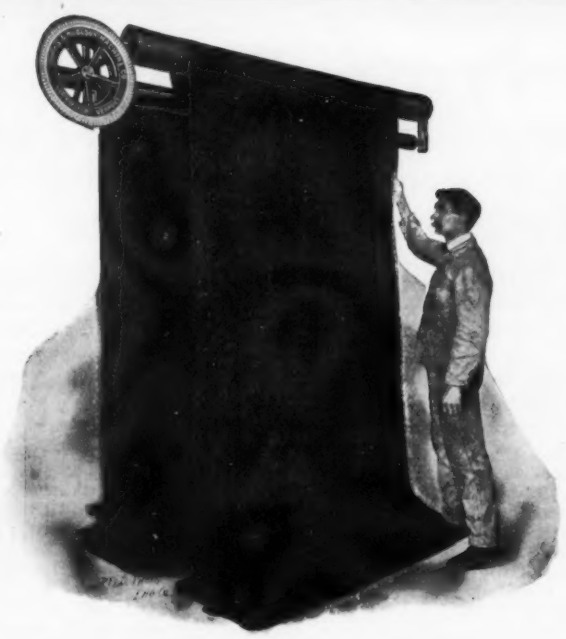

Big as a New Moon

and as Easy to Read
as a Town Clock . . .

OUR IMPROVED

Weavers Perch

100 yd dial
16 inches diameter
Celluloid face
You can try it
Before you buy it

Parks & Woolson
Machine Co

Springfield Vermont

Cloth Washers, Dye Tubs, Vats, Fulling Mills,
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Hopkins Machine Works, Inc.

BRIDGETON, R. I.

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Spindles and
Flyers, for
Cotton, Wool,
Silk, Flax, etc.

Send for our
latest Catalogue
and Price List

Dye Tub Valves,
Cloth Guides, etc.
Bronze or
Porcelain Rings.

ONE MACHINE IN=

Figures Prove Facts.

We have accomplished more than we guaranteed with THE a number of representative manufacturers in allowing us to give

LESS WASTE — LESS SPACE — LESS POWER

Over 500 sold to the best spinners in England and the Continent.

Only one machine rejected up to date and that particular machine was transferred to another mill,

List of Firms in England to whom we have supplied THE NASMITH COMBER.	Number of Orders.	Number of Machines Ordered.
W. Heaton & Sons, Lostock Junction	3	12
J. & P. Coats, Limited, Paisley	2	6
Britannia Spinning Company, Limited, Mossley	1	20
McConnell & Company, Limited, Ancoats, Manchester	2	2
Horrockses, Crewdson & Company, Limited, Preston	1	14
John Wood Brothers, Limited, Glossop	1	12
McConnel & Company, Limited, Droylsden	2	12
William Hollins & Company, Limited, Pleasley Works	4	9
Edward Platt, Limited, Hadfield	1	3
Ferguson Bros., Limited, Carlisle	1	1
Kershaw & Bamford, Oldham	1	2
Richard Harwood & Son, Limited, Bolton	2	3
Musgrave Spinning Company, Limited, Bolton	2	6
J. & W. Bellhouse, Limited, Manchester	1	1
J. Booth & Son, Turton, Bolton	3	6
Don Spinning Company, Limited, Middleton	1	8
Caleb Wright & Company, Tyldesley	1	1
Royal Mill Company, Limited, Oldham	1	5
Brunswick Spinning Company, Limited, Mossley	2	8
Howebridge Spinning Company, Limited, Howebridge	1	1
John Knott & Sons, Limited, Ashton-Under-Lyne	2	4
James Marsden & Sons, Limited, Bolton	3	9
Eli Lees & Company, Limited, Hope Mill, Oldham	1	3
Robert Byrom, Clarence Mill, Stalybridge	1	6
Simpson Brothers, Limited, Ashbourne	1	2
W. & J. Slingsby, Limited, Carleton	1	4
Procktor & Company, Limited, Vale Mill, Hollinwood	1	5
South End Spinning Company, Limited, Mossley	1	5
The Union Ring Mill, Limited, Rochdale	1	4
Wren Mill Company, Limited, Oldham	1	5
Bolton Textile Mill Company, Limited, Bolton	2	7
Gordon Spinning Company, Hollinwood	1	5
Shaw & Shaw, Milnsbridge, Huddersfield	4	7
Majestic Spinning Company, Limited, Oldham	1	20
T. M. Hesketh & Sons, Limited, Astley Bridge	2	6
Dove Spinning Company, Limited, Bolton	1	32
Knowles Limited, Bolton	1	4
Wm. Hollings & Company, Limited, Nottingham	1	2
		262

STEPHEN C. LOWE, 186 Devonshire St., Boston, Mass., Agent for

Makers of Drawing, Slubbing, Intermediate and Roving Frames, absolutely fireproof, "New Century" Improved Carding

Send for Catalogues.

STEAD OF TWO

Results Follow Guarantee.

NASMITH COMBER through the progressive foresight of them a practical demonstration of its merits.

MORE PRODUCTION — BETTER QUALITY

Over 80 sold the first year in the United States.

where it was accepted and shortly followed by repeat orders. (Particulars of this transaction cheerfully given.)

List of Firms on the Continent to whom we have supplied THE NASMITH COMBER.	Number of Orders.	Number of Machines Ordered.
Felber, Jucker & Co.	34	107
Tver Manufacturing Co., Tver, Russia	3	8
Savva Morosoff Sons & Co., Orechovo, Russia	3	11
J. Konovaloff & S. Ltd., Vitchuga, Russia	1	1
Vicoul Moro Soff & Sons, Ltd., Orechovo, Russia	2	4
Bogorodsky Gluchovsky Mfg. Co., Bogorodsk, Russia	2	4
Yaroslaff Grand Manufactory, Russia	1	1
Nevesky Cotton Mills, St. Petersburg	2	2
Felipe Ricart, Barcelona, Spain	2	2
Trumpler & Soehne, Uster, Switzerland	2	6
Balashinsky Mfg. Co., Balasheeka, Russia	1	6
Braschler & Co., Wetzikon, Switzerland	1	2
N. N. Konshin, Serpouchoff, Russia	1	1
P. Malootin & Sons, Ramenskou, Russia	1	1
Wasa Bomullsmanufaktur, Aktiebolag, Wasa	1	4
Spinnerei Paravicini, Landeck, Tyrol	1	4
Visokoffsky Mfg. Co., Moscow	1	4
Spinnerei Unter Aegeri, Canton Zurich	1	2
Thiriez Pere & Fils, Loos, (Nord.)	1	1
Spinneri Nuolen, Switzerland	1	3
E. Zuppinger, Wallisellen, Switzerland	1	2
Nederlandsche Katoenspinnerei, Hengelo	1	1
Hermann Pollacks Sohne. Branau, Bohemia	1	1
Brabant & Vandier, Loos	1	1
J. Le Blan Pere & Fils, Lille	1	6
Lefebvre Horent Freres, Lille	1	1
Fontaine Flament & Co., Lille	1	6
Spinnerei A/D Lorze, Baal, Switzerland	1	1
Spinneri AM/Uznaberg, Uznach	1	3
J. Priebsch-Erben, Switzerland	1	1
Geo. Bodemer, Zschopau, Switzerland	1	1
E. J. Clauss Nachf, Saxony	1	1
Aselmeyer Pfister & Co., Naples	1	1
Bebie & Co., Switzerland	1	4
Somaini & Co., Lomazzo, Switzerland	1	4
		208

JOHN HETHERINGTON & SONS, Ltd., Manchester, Eng.

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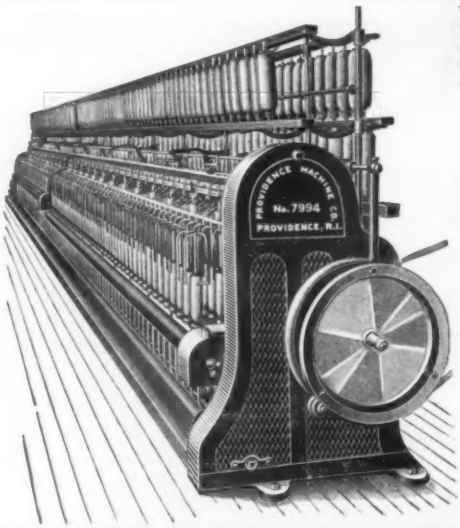
FULL LINE OF PARTS CONSTANTLY IN STOCK.



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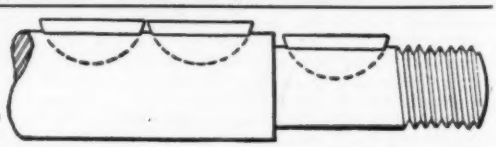

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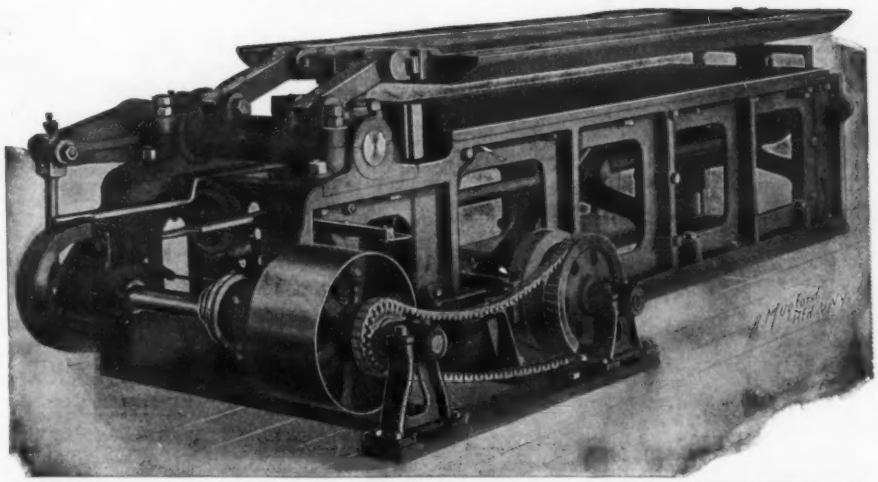

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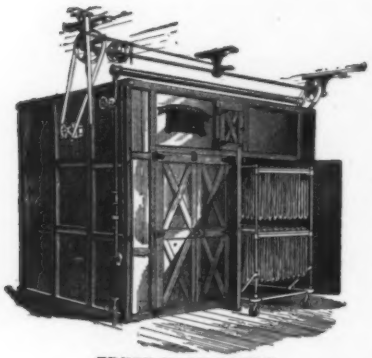

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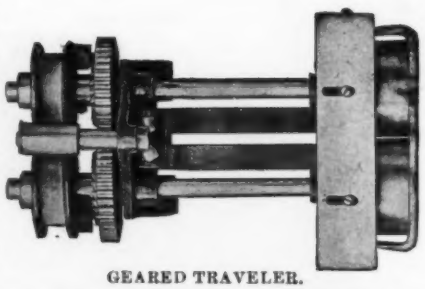

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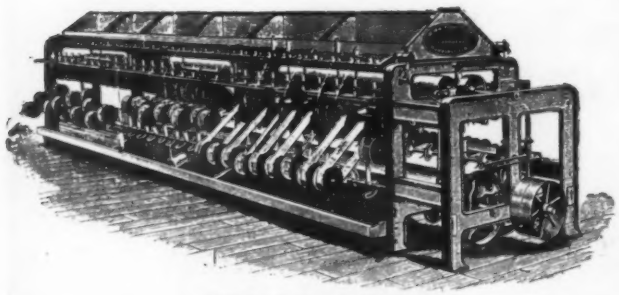

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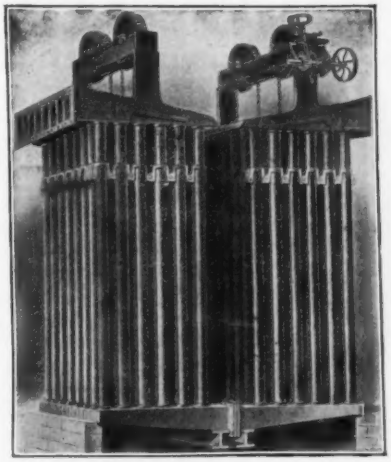

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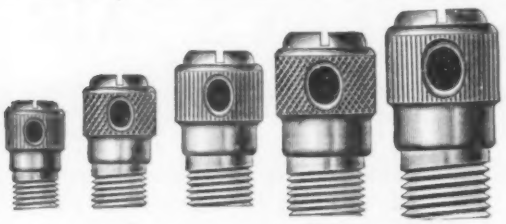

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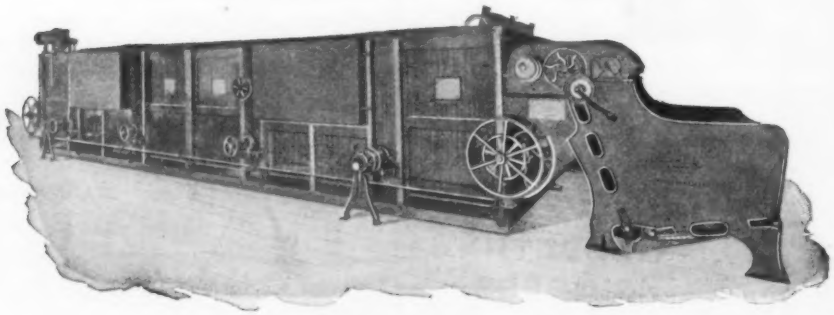

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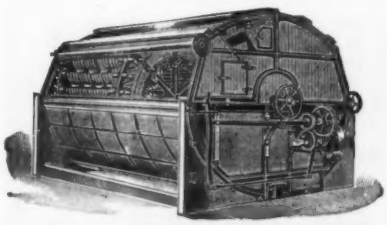

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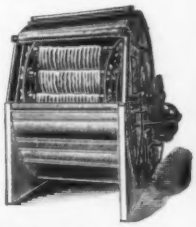

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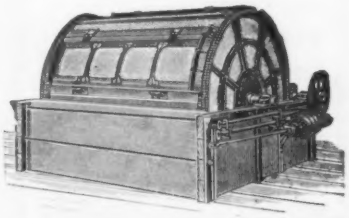

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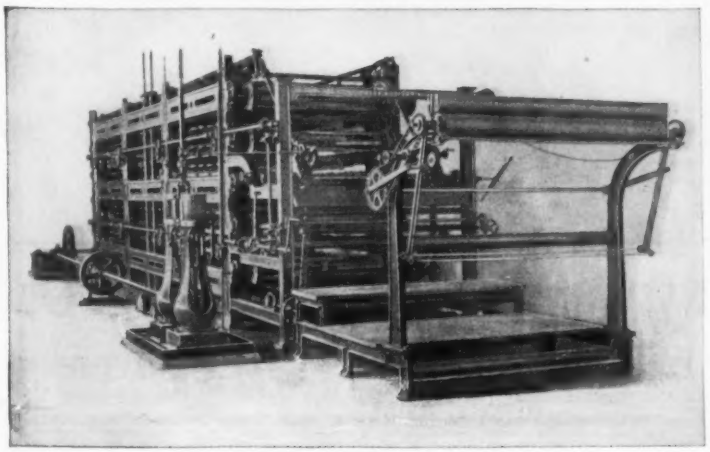
WITH LOW DOWN FEED. **PATENTED FEBRUARY 26, 1895.**



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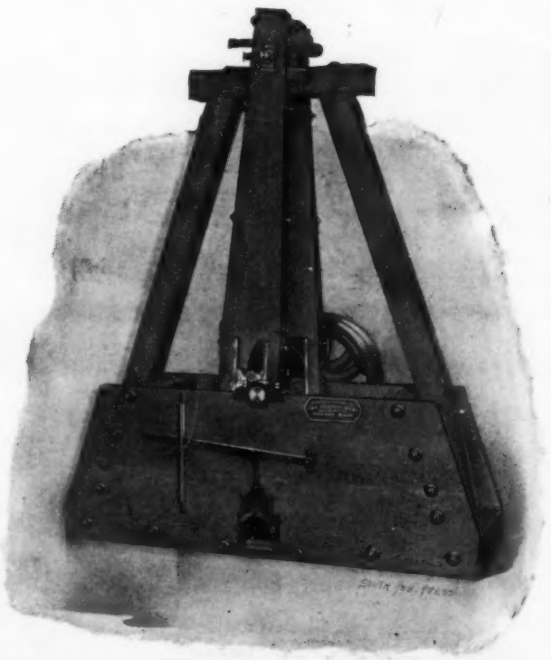

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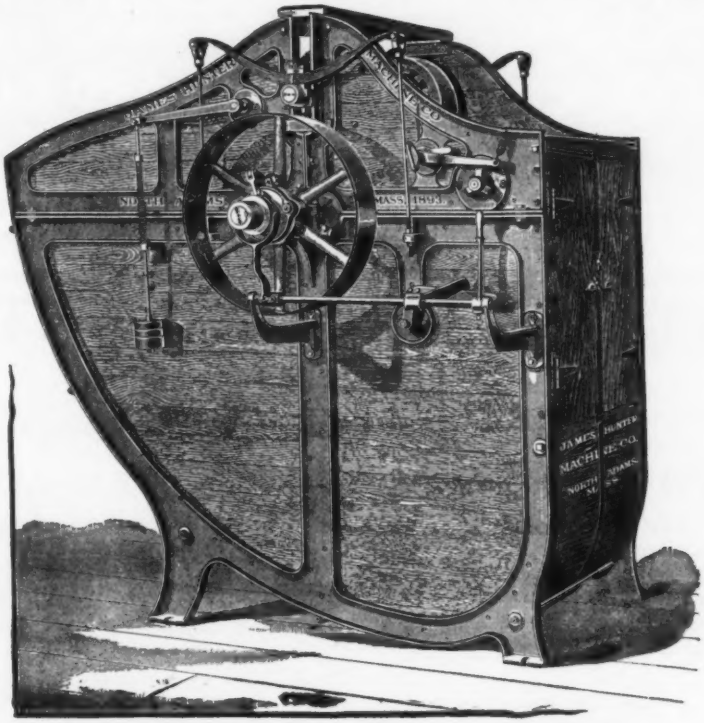

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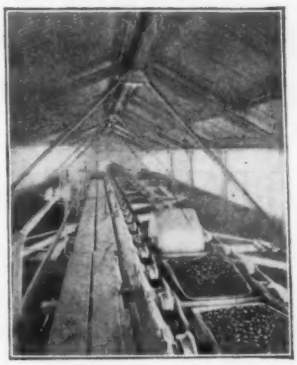

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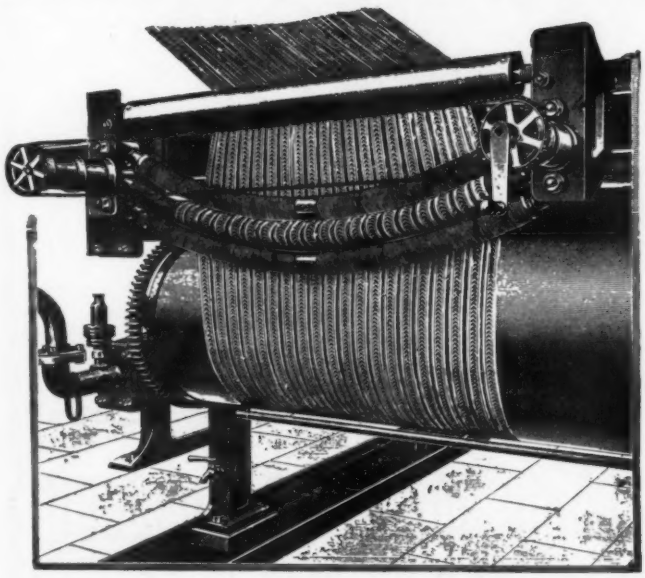

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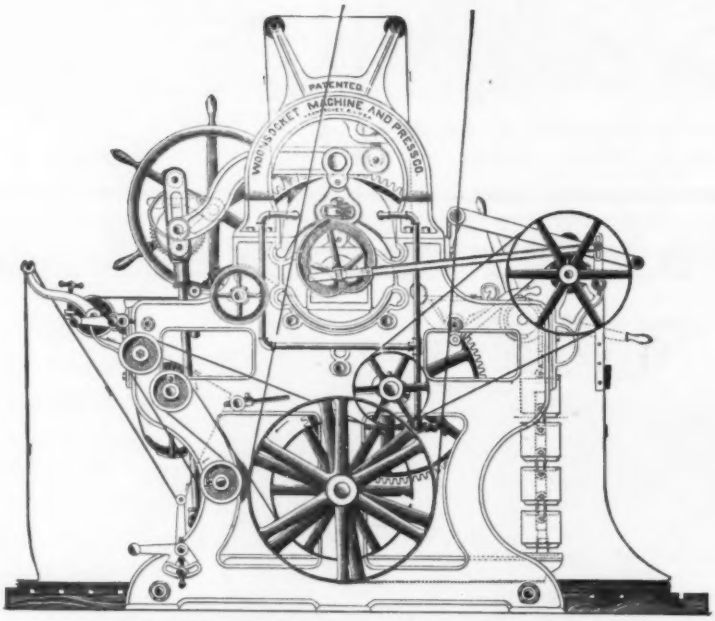

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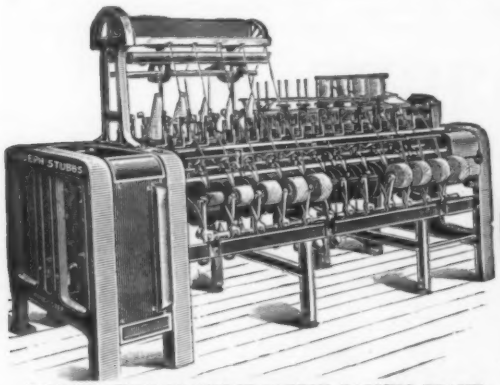

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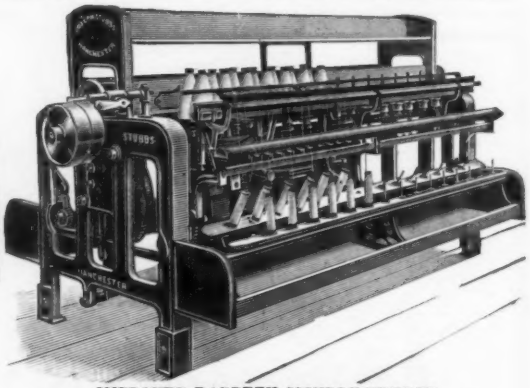

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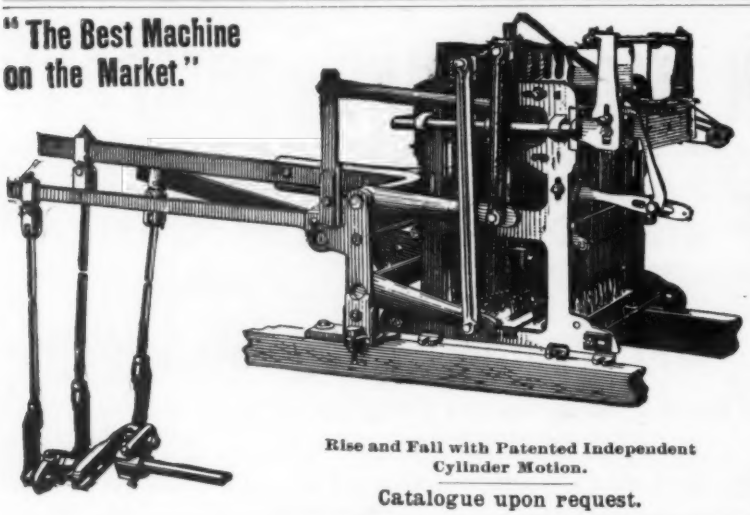

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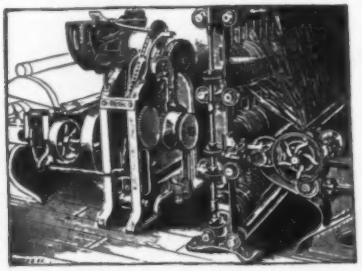

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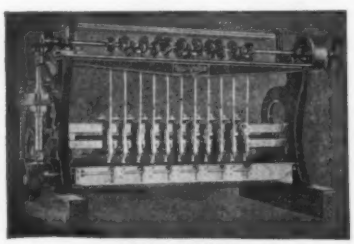

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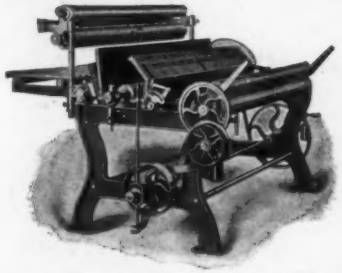

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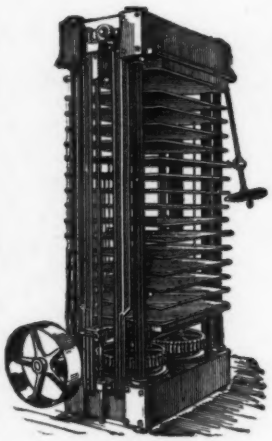

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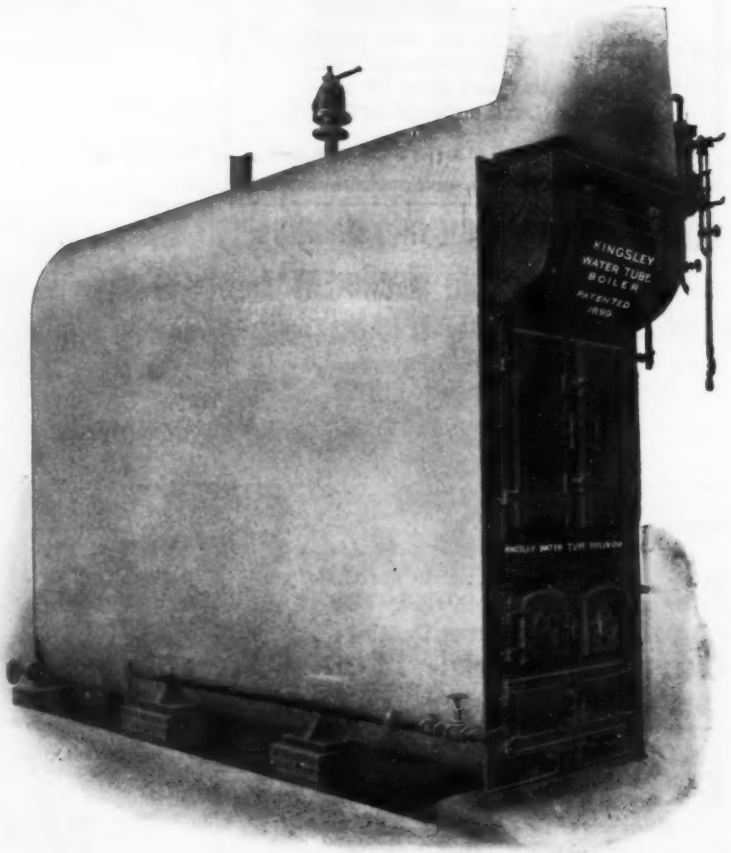

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Space occupied 15 ft. x 14 ft. x 6 ft. 2 in.

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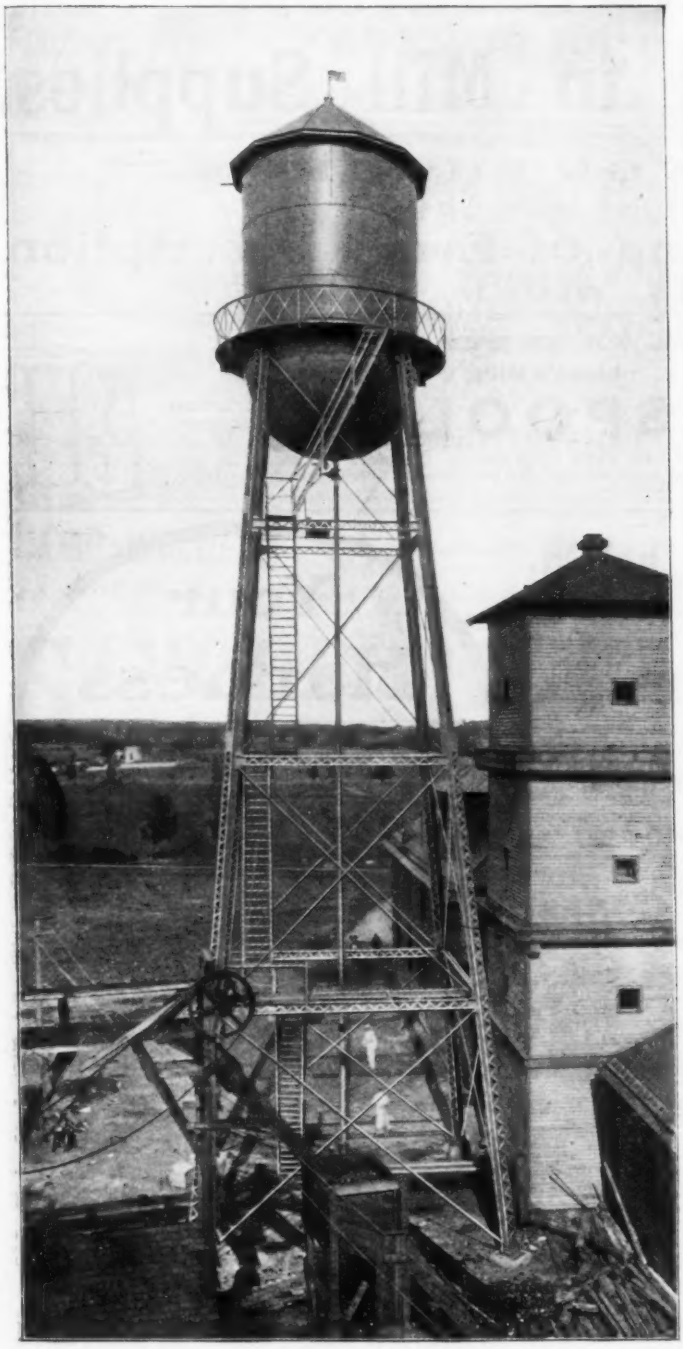

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The T. & W. Towers do not fall or leak.

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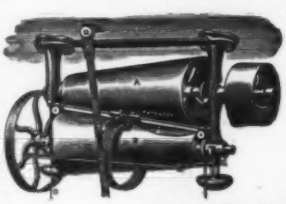

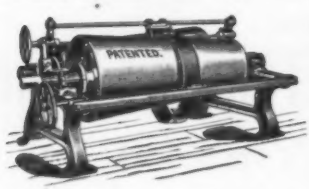

Smith & Winchester Co., So. Windham, Conn., 260 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 375 sets. Pacific Mills, Lawrence, Mass., 13 sets.

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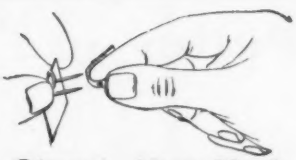

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Made of paper and wood,
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Will not split or warp;
Not liable to break.

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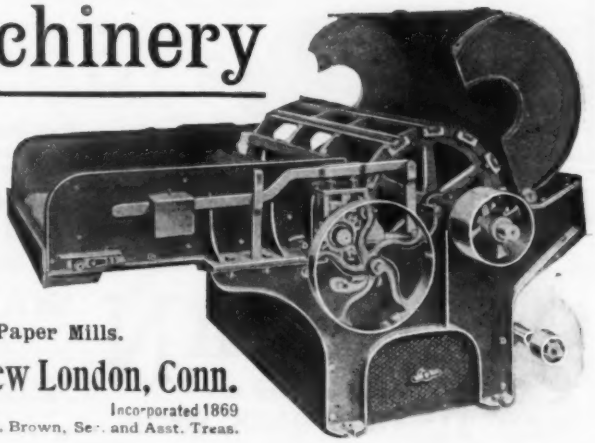

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Cock Spur Feed Roll Mixing Pickers
Steel Ring Double Burring Machines
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Self Feeds for Burr Pickers, Mixing Pickers, etc.
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ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

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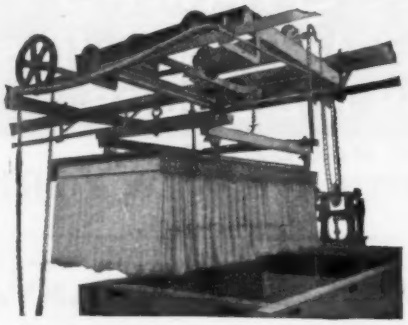
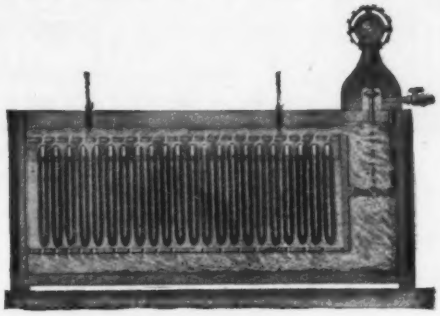
Patented Nov. 6, 1900. April 9, 1901. Nov. 29, 1904.

A PERFECT SKEIN DYEING MACHINE



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine suspended.



Longitudinal Sectional View, showing the circulation of dye-liquor through the yarn when in operation.

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff,
Saving of 75% in Labor. Makes No Waste Whatever. No Friction on the Material,
Requires but Little Power to Operate,
Leaves the Yarn and Slubbing in its Natural Condition.

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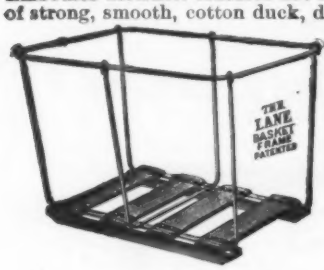

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FIG. 20.

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SOLID CRAYONS
leave no marks after bleaching. Contain no aniline dyes. Are made in ELEVEN colors.
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For Setting Up Bent Teeth of Card Clothing with a variety of all other tools used by Carders and Manufacturers.
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Made of fine wool felt, chemically treated, coated on both sides, waterproof and durable, guaranteed.
The LINCOLN WATERPROOF CLOTH CO.,
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Where? How? Why? Who?

Where can we get such a machine?

How can we produce this effect?

Is the production of our mill too low?

How can the production be increased?

Why does this machine run badly, and what can I do to fix it?

How is this problem solved?

How is this fabric made?

Why is this fabric better than that?

Such questions and scores of similar ones are constantly arising, and the Questions and Answers Department undertakes to answer those relating to textile matters, free of charge to the best of its ability, and invites such correspondence from subscribers. Address the Boston office.

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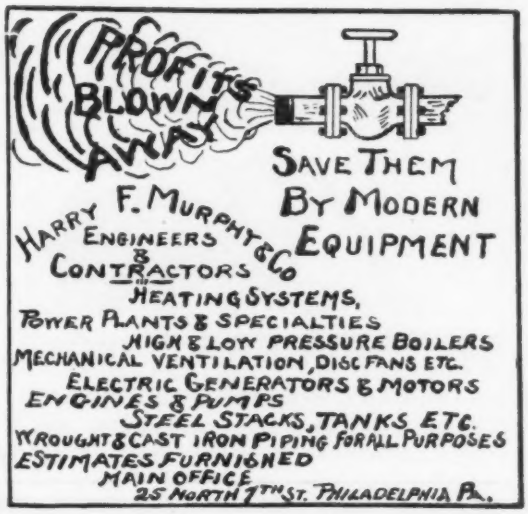
299 Devonshire St., Boston, Mass.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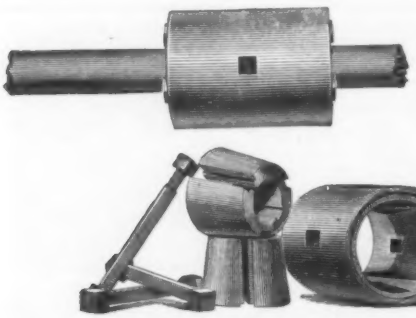

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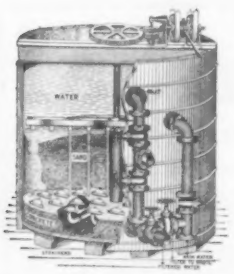

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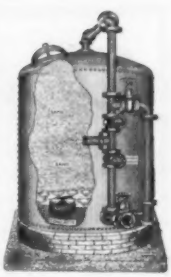

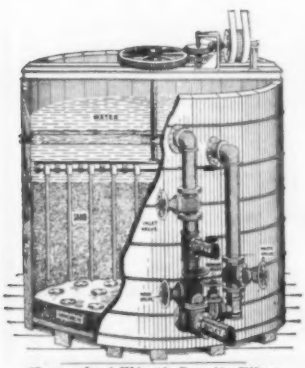

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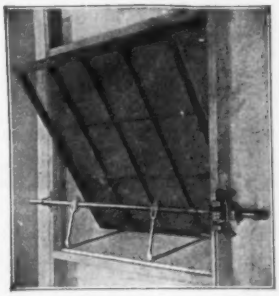

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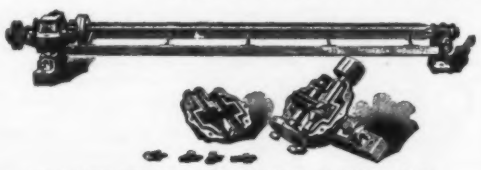

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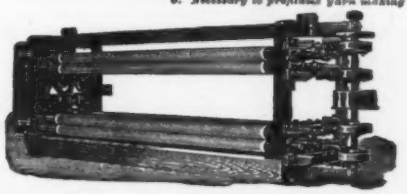

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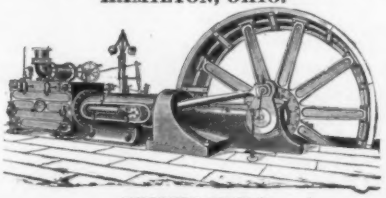

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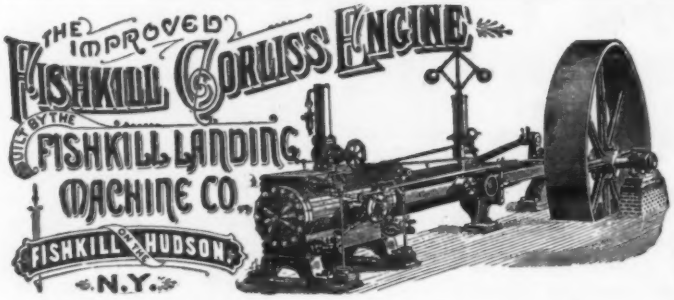

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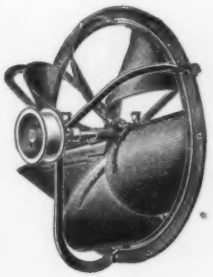

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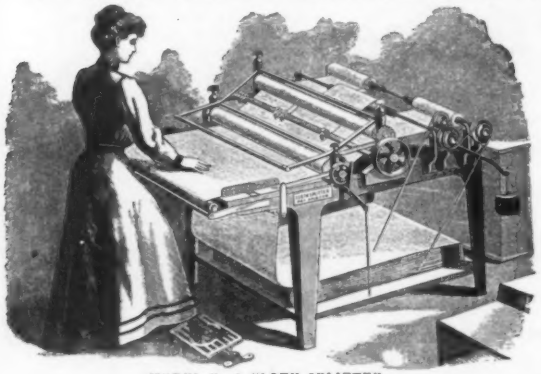

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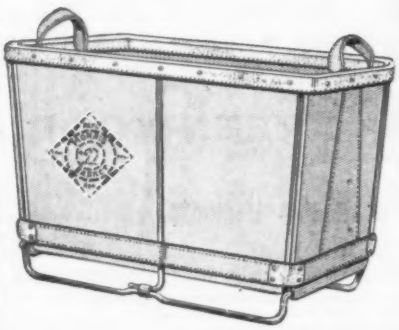

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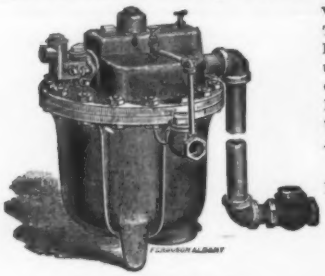

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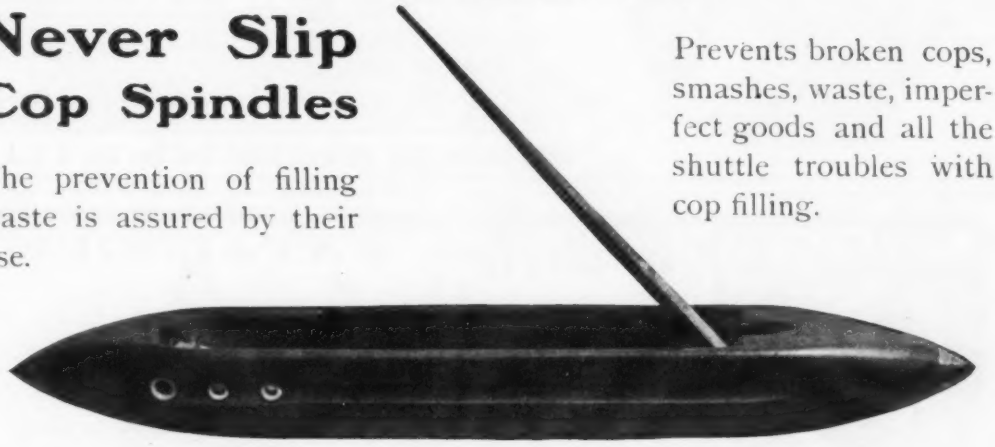

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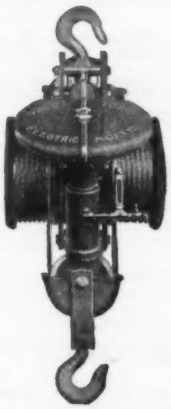

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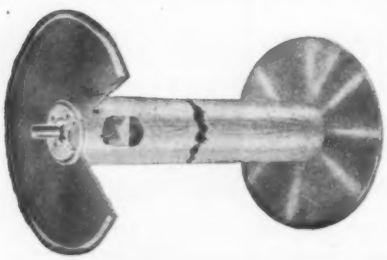

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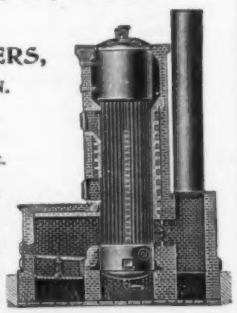

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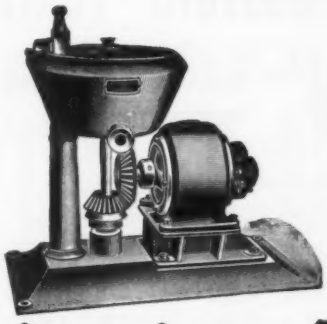

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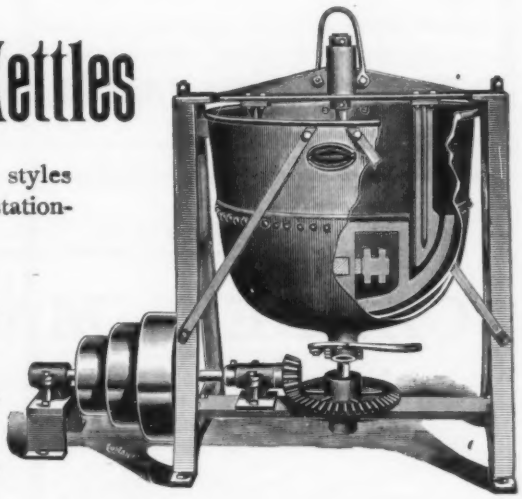

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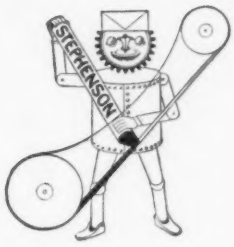

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Manual of Weave Construction, by *Ivo Kastanek*, Edited and arranged by S. S. Dale 1.00

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The Textile Fibres. Matthews. Just published 3.50
Waterproofing of Textile Fabrics. Mierzinski.. 2.50
Yarn and Cloth Calculations. Yates 1.00

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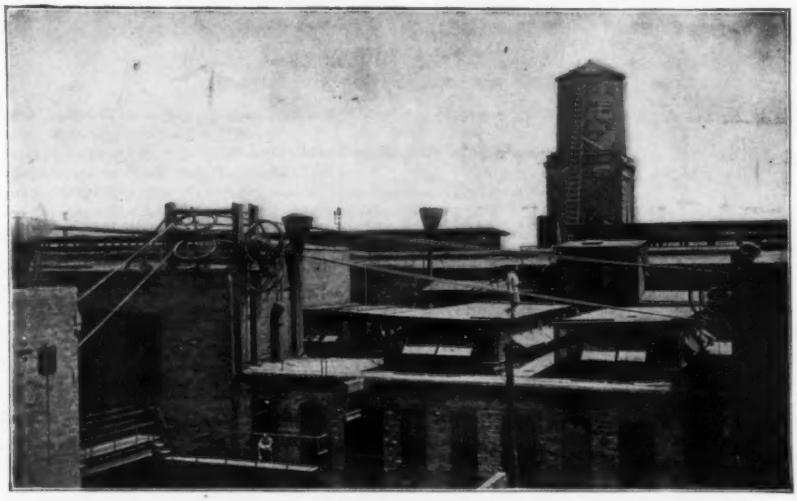

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PART I. Contains a complete directory of all the textile establishments in the United States and Canada. It tells what goods are made, the number of sets of cards, spindles, looms, whether and what they dye or finish, steam or water power, who the selling agents are, the names of the officers, superintendent and buyer.

There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains classified list of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a specialty of textile interests.

PART VI. Buyers Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

The Directory of the Knitting Trade in the United States and Canada

Is published early each year by LORD & NAGLE CO. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendent and buyer, class of goods made, the machinery, including number of knitting machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.

PLAIN AND FANCY

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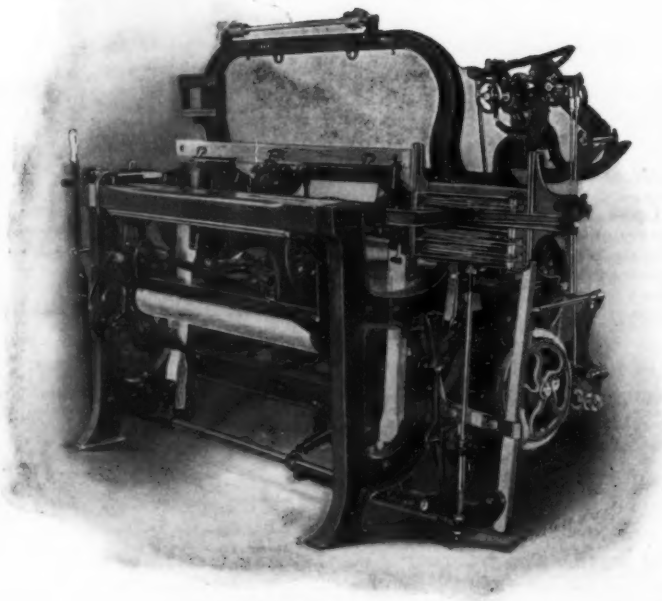

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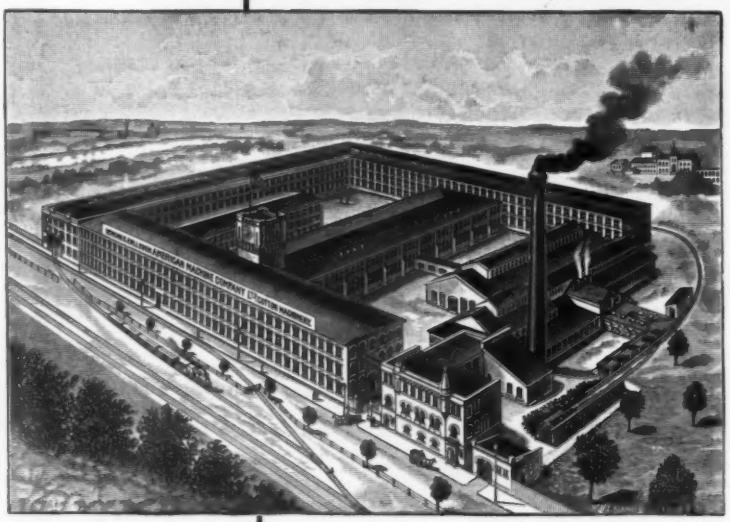

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Monthly Comment.

How the Sliding Scale Slides.

The operation of the sliding scale in the cotton mills of Fall River from its adoption in October, 1905, to the end of January, 1906, is shown by the following table:

Week ending	Middling Uplands	28-inch 64×64	38½-inch 64×64	Margin	Wage premium above 15c per cut ¢
1905					
Oct. 27....	10⅜	3⅜c	4⅞c	.77	5
Nov. 3....	10.8583	3⅜c	4.8958c	.757	3
10....	11.61	3⅜c	5c	.714	0
17....	11.28⅛	3⅜c	5c	.74	2
24....	11.43⅞	3⅜c	5.041c	.735	1
Dec. 1....	11.80	3⅜c	5.15c	.752	3
8....	12.35⅝	3⅜c	5⅛c	.724	0
15....	12.03⅛	3⅜c	5⅛c	.7502	3
22....	12.19⅛	3⅜c	5⅛c	.7376	1
29....	11.99	3⅜c	5⅛c	.7537	3
1906					
Jan. 5....	11.86	3⅜c	5⅛c	.7641	4
12....	11.76⅞	3.79166c	5⅛c	.7809	6
19....	12.125	3.79166c	5⅛c	.7523	3
26....	11.96⅞	3⅜c	5⅛c	.7556	3

Buying Wool.

The importance of buying wool was emphasized in our January issue by examples from mill practice contrasting the results of poor and good judgment in this department. It is not only necessary to have men of experience buy the wool and inspect deliveries, but it is likewise esssntial that a system of tests should be established by which the cost and quality of each lot are determined.

The shrinkage in the processes of carding, combing, drawing, spinning and finishing affect the value of the wool as much as does the shrinkage in scouring. In the case of wool for worsted yarn it is possible by means of a combing test to determine not only the yield of scoured stock, but also the yield of top, noils, card waste, burr waste and laps, and to do this on such a large scale as to ensure an accurate average which cannot be secured when but a few hundred pounds is tested.

The exercise of care on the part of the overseer is necessary in order to keep the test lot from becoming mixed with other wool in process and to obtain the correct weight of the various materials. One test can easily be made to include the sorting, scouring, carding and combing processes, and, if desired, even extended to include the drawing and spinning departments. It will be found, however, that the extension of the test beyond the combing process entails difficulties that are not balanced by the resulting benefits, and that the combing test will answer all practical requirements. It can be best illustrated by an example from actual practice.

During the free wool period under the Wilson bill a New England mill was using large quantities of 3/8 domestic wool. 77 bags, 12,938 lbs. net, of unwashed West Virginia wool, Lot 247, costing 20 cents a pound were taken for the test, which gave the following result:

%	Sorts	lbs.	Price	Total
88.64	3/8 Combing	11,468	$.2117	$2,427.95
2.78	3/8 Burry	359	.12	43.08
6.42	1/4 "	830	.12	99.60
.52	Low Sort	67	.10	6.70
.54	Stained	70	.12	8.40
.05	Seedy	7	.12	.84
.40	Clips	53	.01 1/4	.66
.57	Strings	74	.005	.37
.08	Loss in Sorting	10		
		12,938	20	$2,587.60

The 3/8 combing, 11,468 lbs., obtained from the lot was next carded and combed with the following result:

% Grease Wt.	% Clean Wt.	Product	lbs.	Price	Total
	84.5	Top	5140	$.4455	$2290.05
	11.6	Noil	709	.16	113.44
	2.9	Card Waste	174	.10	17.40
	.4	Burr Waste	26	.01	.26
	.6	Laps	34	.20	6.80
53.04	100.		6083		
46.96		Loss	5385		
100.			11,468	.21 12	$2,427.95

The value of the combing sort is found by first appraising the value of the waste sorts, and subtracting the value of the latter, $159.65, from the total of the invoice, $2,587.60. From the total for the combing sort thus obtained, $2,427.95, the average value, $0.2117 per lb., is found by dividing by the weight, 11,468 lbs. The same method is used for the combing test, the appraised value of the noils and waste being deducted from the calculated cost of the combing sort to obtain the cost of the combed top.

The test shows the proportion of each sort, of top, noil, waste, and the loss in scouring, and enables the manufacturer to determine the exact yield of every purchase of wool. A record of the tests shows the comparative value of the different grades of wool, and makes it possible for the buyer to take advantage of the most profitable wools on the market. This can be illustrated by another test made a few weeks later in the same mill. At that time Australian crossbred wool could be imported free of duty, but the mill owner was unwilling to change from the West Virginia grade that he had used for years. He was finally induced to buy two sample bales of the Australian and a combing test showed that the top cost 35.4 cents per pound, as compared with 44.55 cents for the domestic top. This led to buying a larger lot, and the combing test resulted as follows:

10,618 lbs. Aust. crossbred @ 21.44 cents:

%	Sorts	lbs.	Price	Total
97.11	3/8 Combing	10,311	$.2157	$2,223.66
.66	Burry	70	.12	8.40
.30	Fribs	32	.12	3.84
.05	Cotts	5	.12	.60
1.88	1/4 Combing	200	.20	40.
100		10,618		$2,276.50

Combing test of 10,000 pounds of this crossbred wool:

% Grease Wt.	% Clean Wt.	Product	lbs.	Price	Total
	85.	Top	5,655	$.355	$2,006.95
	11.4	Noil	757	.16	121.12
	2.5	Card Waste	166	.10	16.60
	.2	Bur Waste	13	.01	.13
	.9	Laps	61	.20	12.20
66.52	100		6,652		
33.48		Loss	3,348		
100.			10,000	.2157	$2,157.00

The larger test thus confirmed the correctness of the smaller one and showed that the Australian wool yielded top costing 9 cents a pound or 20 per cent. less than that obtained from the West Virginia wool. The extent of this difference can be better appreciated from the fact that the mill in question was combing 2,000 pounds of 3/8 blood top a day. On this production this 9 cents a pound amounts to $180 a day or $54,000 a year.

The importance of buying wool is generally admitted, but such illustrations as those given above and in last month's issue make perfectly clear the vital character of this branch of mill management. No woolen or worsted mill can be successful unless an experienced and honest man, aided by a system of testing each lot of wool in the mill, is in charge of the wool purchasing department.

Silk Subsidies.

The subsidies paid to silk raisers in France by the government amount to about 4,000,000 francs per year, or about $800,000. In 1902 the figures were 4,354,742 francs, and in 1903, 4,084,422 francs. In spite of this artificial encouragement it is reported that the production of French silk is steadily declining.

Wool Manufacturers' Annual Meeting.

The forty-first annual meeting and banquet of the National Association of Wool Manufacturers was held at Hotel Somerset, Boston, on February 7th.

The business meeting which preceded the banquet was well attended. The report of the secretary showed the affairs of the Association to be in a prosperous condition, reflecting the general prosperity which has prevailed during the past year. He reviewed at length the reciprocity movement in 1905 and its present status, giving a comprehensive analysis of this movement, and also discussing the subject of the new German tariff and its probable effect.

No legislative attacks have been recently directed especially against the wool industry, although legislation is frequently proposed which will bear watching as in the case of the attempt which is now being made to modify the provisions of the Customs Administrative Act, referred to at length elsewhere in this issue. In connection with this movement the following resolutions were unanimously adopted:

Resolved, That the members of the National Association of Wool Manufacturers, at their annual meeting, held February 7, 1906, declare themselves as unalterably opposed to the changes in the customs laws indicated in the preambles hereto, and they urge all bodies having similar aims to present a united opposition to changes which threaten loss to the United States Treasury, dire consequences to domestic industries, and which, if enacted into law, will make of this country a dumping ground for the surplus production of the manufacturing nations of Europe.

Other resolutions were adopted as follows:

Resolved, That the National Association of Wool Manufacturers reaffirms its pronounced opposition to the negotiation and ratification of reciprocity treaties by which diplomacy is substituted for legislation, a position long since taken by this organization and one strengthened and justified by the lapse of time.

Resolved, That we favor tariff revision when it shall be required to promote the prosperity of the American people. We believe that the economic policy of this country should be governed by the interests of its productive industries, which give to the country its wealth, to its labor remunerative wages, and to its people the comforts of life. Commercial and general prosperity must inevitably accompany prosperous agriculture, mining and manufactures. The unexampled prosperous conditions in these three great productive industries and in commerce now existing in the United States render immediate tariff revision undesirable.

The business meeting was followed by a banquet, at which over two hundred were present, a representative gathering of the wool and worsted manufacturing interests of the country.

At the speakers' table were seated President William Whitman, Miss Gertrude Beeks, Messrs. J. R. MacColl, Wm. Bloodgood, C. H. Hutchins, Fred S. Clarke, John N. Carpender, A. J. Abbot, John P. Wood, L. B. Goodall, F. T. Maxwell, L. W. Miller, H. F. J. Porter, C. H. Harding, Albert Clarke. A. Hun Berry, Wm. C. Greene, Chas. A. Stott, J. F. Maynard, G. C. Moses, Frank Hopewell.

The president extended greetings and congratulations on the prosperous year that has just closed, which he said may be classed as one of the most successful years in the history of wool manufacture since the close of the Civil War, and the present outlook warrants the expectation of its continuance for the coming year. He showed, by comparisons, the immense growth that has taken place in wool manufacture in the last two decades. "The foreign value of our total imports of wool manufactures in 1905 was only $18,021,041.68, while the foreign value of our total importations for 1886 was the large sum of $40,536,509.38, showing a decline in the twenty years of about 56 per cent. The wool manufacturers have increased their products to an extent that enables them not only to provide for the increased population of about 47 per cent., or 27 millions of people, but in addition to this, has enabled them to displace foreign importations to the extent of about 56 per cent."

The speaker called attention to the fears in some quarters of the effect of tariff legislation in other countries, discriminating against the American products. In his opinion, these fears are, for the most part, groundless, and he believes that the producers of the United States have nothing to fear from the German tariff.

"At our last banquet I stated that 'we may feel reasonably sure that the present wool and woolen tariff will remain the law of the land for some years to come.' The course of events during the last twelve months leads me to believe that this prediction was well

founded, and despite various movements in favor of tariff revision, I do not look for such in the near future."

A departure was made this year in the line of after-dinner speaking. Heretofore the speakers have chosen for their subjects topics of national policy, tariff matters and legislation. This year the subject was Industrial Education and Welfare Work.

The first speaker was Mr. Leslie W. Miller, principal of the Pennsylvania Museum and School of Industrial Art. Mr. Miller dwelt on the importance of developing character in workmanship. He pointed out the danger of developing machinery to an extent that the workman counts for nothing and becomes a mere automaton. He recalled the fact that the textile products of the middle ages, when all work was done by hand, or with hand-operated machinery, had never been surpassed in beauty and character of design, and he felt that industrial education should tend to the improvement of the man behind the loom. He spoke of the general recognition at the present time of the close relationship that industrial and technical education bears to the manufacturing progress of the country, and stated that if America is to gain the foremost place among the manufacturing nations of the world, it must be by the development of men and by turning out men who are not only good, but good for something.

Mr. H. F. J. Porter, an industrial engineer of New York City, then spoke of welfare work and its practical development as a recognized feature of industrial establishments. One of the principal causes of failure in some of the experiments which have been tried in this direction has been the appearance of charity and paternalism, which the independent American operative will not tolerate.

"Care must be taken to avoid paternalism in the treatment of his people. No self-respecting man will stand patronizing, nor does he wish to be looked upon as an object of charity. Employes should be allowed to suggest their needs, and how the latter should be supplied, rather than that their needs should be pointed out and offers made to meet them. First of all, however, what men work for is money, and until their wages are satisfactorily adjusted any reference to betterment of conditions will be taken as a proposed substitute and looked upon with suspicion."

Miss Gertrude Beeks, the secretary of the Welfare Department of the Civic Federation, gave a most interesting talk, illustrated by many stereopticon views, explaining the work of the Welfare Department of the Civic Federation and showing how many establishments in various lines of industry were working along practical lines to provide the best and most cheerful conditions for work and means of recreation for their employes. The work of this department takes in a wide range of subjects, such as ventilation, sanitary conditions, bathing facilities, lunch rooms, rest rooms, recreation halls, gymnasiums and the homes of the operatives.

The Federation is prepared to give freely to manufacturers the result of the experience of others in this line and save them from many mistakes which often arise from good intentions without the necessary experience.

The following officers were elected for 1906, there being comparatively little change from last year's list:

President: William Whitman, Boston, Mass

Vice-Presidents: Charles H. Harding, Philadelphia, Pa.; William M. Wood, Boston, Mass.; Frederic S. Clark, North Billerica, Mass.

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Government Contracts.

The employment of a textile expert by the government to examine goods delivered on contract and to suggest changes in the specifications with a view of reducing the chance of error and opportunity for fraud, reported in another part of this issue, calls attention to the probable effect of the Littauer bill on government contracts for textile goods. The government is a very large purchaser of a varied assortment of textile products. Probably the best way of forming an idea as to the effect of this bill on the specifications is to select a few typical products and arrange the old and new forms in parallel:

SPECIFICATIONS FOR GARRISON FLAGS.

At present.	Littauer sizes.
Weight and width:—Standard bunting 1⅞ ounces per yard, 19 inches width,	58.1 grams per meter 48.3 centimeters wide.
Count:—Warp, 34 threads per inch,	13.3 threads per centimeter.
Filling, 32 threads per inch,	12.6 threads per centimeter.
Dimensions:—Fly, 36 feet long,	10.97 meters.
Hoist, 20 feet,	6.09 meters.
Blue field, 12 feet long,	3.66 meters.
Stars, one for each State 10 inches from point to point, of muslin with 70 threads warp and 60 threads filling per inch,	25.4 centimeter from point to point, and 27.5 threads warp and 23.6 threads filling per centimeter.

Turning to knit goods we find the War Department calling for winter undershirts as follows:

We wonder if the Hon. Lucius Nathan Littauer has consulted with the United States quartermaster-general as to the effect of his

SPECIFICATIONS FOR WINTER UNDERSHIRTS (HEAVY WEIGHT.)

At present.	Littauer Sizes.
Count:—17 x 26 stitches per square inch,	6.7 x 10.2 stitches per centimeter.
Strength:—40 lbs. per inch perpendicularly,	71.4 kilograms per decimeter.
35 lbs. per inch laterally,	62.5 kilograms per decimeter.
Buttons:—18 ligne (ligne-1/40 inch),	No metric system for buttons: French use old French inch.
Workmanship:—Knit two-thread on an 18-gauge machine,	Impossible to change gauge of knitting machine. Germans still use Saxon inch for gauges.

We will select for our last illustration a grade of woolen gloves used by the War Department:

little bill in that branch of the service. The quartermaster-general is now engaged in revising the official specifications for textile

SPECIFICATIONS FOR WHITE WOOLEN GLOVES.

At present.	Littauer sizes.
Yarn:—20 grains per 25 yards,	14.1 centigrams per 25 meters.
Cuffs:—4 inches long knit on a 40-needle ribber 4 inches in diameter,	10.16 centimeters long on a ribber 10.16 centimeters in diameter.
Hand:—4½ inches long with not less than 70 needles, 6 to the inch,	11.43 centimeters long with not less than 23.6 needles per decimeter.
Size:—12 inches long in three sizes, No. 9, 9½ inches; No. 10, 10 inches; No. 11, 10½ inches.	30.48 centimeters long, sizes 24.1, 25.4 and 26.7 centimeters.
Weight:—1¾ pounds per dozen pairs,	793 grammes per dozen pairs.

Similar examples might be continued indefinitely, but those given illustrate the difficulties that will confront officials and contractors in supplying the government with textile goods under the Littauer bill.

Two ways of dealing with the problem are available. The present dimensions can be reduced, as we have done, to metric equivalents, or the specifications can be revised In the former case cumbersome expressions of weight and measure are obtained; in the latter, the construction of the goods is altered. In either case the specifications for the vast quantity and varied assortment of materials bought by the government will be made incomprehensible to government officials, textile manufacturers and the public generally, without the slightest practical or theoretical advantage to anyone. To involve the textile trade and the quartermaster-general's department in confusion by such alterations without any benefit would indeed be the height of folly.

materials in order to make them clear and unmistakable, that the chance for errors, misunderstandings and graft may be reduced to a minimum. Do Mr. Littauer and the Hon. James H. Southard, of Ohio, think these desirable objects will be promoted by reducing official weights and measures to new and strange standards?

A Government Expert on Textiles.

For a long time there have been general charges of graft in the filling of government contracts for materials. They involved the officials in the quartermaster's department at Washington and at the various depots throughout the country. Vague and unsubstantiated by evidence the rumors, nevertheless, threw practically the whole official force under suspicion, and led the quartermaster-general to investigate the system of awarding and filling contracts, in order that the chances of fraud might be reduced to a minimum. One of the first steps was to secure the services of experts of unquestioned ability and integrity to test the quality of the goods delivered and determine whether they were up to the specified requirements. For textiles Prof. E. W. France, of the Philadelphia Textile School, was chosen as expert, and for some time has been engaged in testing goods delivered to the government and comparing the results with the specifications. Prof. France has, it is reported, discovered certain defects in the existing specifications, and has made suggestions for their correction, which are calculated to make the requirements clearer, more practical and to make deception more difficult. Such a revision of textile specifications will be welcomed by manufacturers competing for government business, as the ambiguity of the existing phraseology has often discouraged manufacturers from bidding for government contracts, and thus given an advantage to those who have been engaged in that line of work.

Dividends in Lancashire Mills.

The gross profit of seventy-one Lancashire cotton mills making returns for 1905, amounts to $2,865,650.40, an average of $40,361.27 per company or 7 1/4 per cent. of the capital stock. The number of spindles represented by these 71 companies is 6,176,366. The appraised value of the mills, machinery, etc., is $18,544,321.44, an average of $2.97 per spindle. This rate of dividend has been equaled in Lancashire in but one other year since 1884, while the average for these 22 years is 4.06 per cent.

Preparing for the Cotton Conference.

At the Atlantic City meeting of the New England Cotton Manufacturers' Association a resolution was adopted with the object of bringing about an international conference of cotton growers and manufacturers. This resolution followed a suggestion to that effect by the representative of the New England Association at the Manchester, Eng., Congress last June. Late last month a preliminary meeting of the representatives of the New England Association, the American Cotton Manufacturers' Association, the Southern Cotton Association, and the National Ginners' Association, was held in New York, when it was decided to hold the international conference at Washington on May 1. The invitations to this conference provide that each cotton association shall be represented by five delegates in addition to its president and secretary.

Besides the association represented at the New York meeting, it is proposed to include the following in the conference: International Cotton Federation of Europe, the National Association of Manufacturers of the United States, the New Orleans Cotton Association, the Liverpool Cotton Association. The United States Department of Agriculture and the Department of Commerce and Labor are also to be invited to send representatives.

The cable reports of the New York meeting appear to have created some misunderstanding in England, as will appear from the following item in the Manchester Guardian.

Inquiries made at the offices of the International Federation of Master Cotton Spinners and Manufacturers' Associations and at the English Federation of Master Cotton Spinners' Associations show that these associations have not received an invitation to this conference from Mr. Harvie Jordan, president of the Southern Cotton Association. These important federations, embracing the greater part of the cotton industry of Europe, will not be represented at the conference.

There has also been some confusion abroad regarding the various meetings and conferences by reason of the fact that the International Federation has already accepted an invitation to send a representative to the spring meeting of the New England Cotton Manufacturers' Association at Boston on April 25 and 26. This, however, is wholly

distinct from the proposed international conference, to which the president and five delegates are expected from each association. The delegates from the International Federation will probably have to be appointed by the Committee of Management, the members of which are all busy men and widely scattered throughout Europe, representing as they do Austria, Belgium, France, Germany, Italy, Spain, Portugal, Russia, Great Britain, and Switzerland. It will require quick work and the free use of the ocean cable to bring the president and five members of this great Federation to attend the Washington conference in May. It is a matter of regret that the preliminary meeting to arrange for this conference was not held earlier than four months after the Atlantic City meeting in September.

Woolen Manufacturing in Australia.

The development of manufacturing near the source of the raw material, which has been so marked a feature of the cotton industry throughout the world, is apparently not being duplicated in the woolen industry. This is emphasized by the recent failure of the woolen mill established at Footscray, near Melbourne, in 1896, and the general causes to which the collapse is ascribed. Soon after the mill began operations the wages of the operatives were increased by the Wages Board, and following this the Australian tariff on woolen goods was reduced by the Parliament of the Commonwealth. The resulting increase in the cost of production and in the competition of British goods, coupled with the natural obstacles to the success of a new manufacturing industry in any country and especially in a country like Australia, have proved too much for the woolen industry in that country to stand. Hence the end of the Footscray enterprise, which is an indication of a general condition in Australia.

Proof that protection by high specific duties is essential to the establishment of a manufacturing industry even when conditions are favorable, is found on every hand. The United States and Canada supply it in contrasting forms, but probably the most striking demonstration of this fact is supplied by the failure to establish worsted spinning by the French system in England. In this centre of the worsted trade, with skilled help, access to markets and free wool, it has been found so far impossible to establish the French system of worsted spinning in the absence of tariff protection against the French-spun yarn from the Continent. The failure of the woolen industry in Australia under more adverse conditions is not a reason for surprise.

The Tariff in England.

A remarkable collection of opinions of English woolen manufacturers and traders has been obtained by the British Tariff Commission, organized by Joseph Chamberlain at the beginning of his campaign in favor of protection in Great Britain. These opinions have recently been published, and cover a wide range of topics bearing directly and indirectly on tariff and industrial questions. The witnesses were selected from representative woolen manufacturers and merchants. To give our readers an idea of English opinion we have made extracts from the testimony of the leading witnesses:

WHO PAYS THE TAX?

In the United States one of the tenets of protection is that the foreigner pays the tax. ers, but here are Englishmen who have paid the American tariff tax and do not hesitate to admit it:

Francis Willey: The exporter pays a great portion of the duty, but not all. Take the duties in America; I have seen them altered several times. Their last alteration was under the McKinley tariff, and they put the enormous duty of 12 cents per pound on our home-grown wools and immediately this duty came into operation prices dropped here. The British farmer pays a great portion of these duties.

Martin Albrecht: The people (English) would not have to pay a farthing more because of these duties. I had an experience of that when the French duty was raised. The French duty made about 25 centimes difference on a 1s. 6d. cloth. When the French duty was raised we were exporting, we will say, one cloth at 1s. 6d. per yard. Under the old duty we delivered it in Paris for 2 francs 25 1/2; under the new specific duty it came to 2 francs 50. The Frenchman would not pay a fraction more for his cloth that went there; we could not get any more, and it came back on the manufacturer.

EMIGRATION TO PROTECTED COUNTRIES.

Emigrants are leaving Europe for America at the rate of about one million per year, because of the better opportunities offered the poor man in this country of high protection. Several witnesses referred to the inducements that lead not only the working man but the business man to emigrate from free trade England to protected countries:

J. K. Empsall: We have one house that is leaving us now for America. They have been doing a direct American trade, merchanting their own goods, for perhaps 15 or 17 years, and they find that they can with advantage go there, so they have shipped their looms out to America. Theirs is a very largely established business. They are keeping on the factory here, but have reduced it.

J. C. Broadbent: British manufacturers have gone out to the United States in the past, and workmen, too; factories have been erected with English capital. They become Yankees and employ Yankees.

DECLINE OF ENGLISH TRADE.

In line with this evidence came testimony from many witnesses in regard to the decline of industry and population in England owing to the loss of foreign markets:

F. D. Moors: There are fewer looms now in the Bradford district than there were years ago. Scarcely a mill of any size has been put up in Bradford district during the last 25 years.

A. J. Sanderson: The number of people employed in the woolen trade in the three counties of Roxburgh, Selkirk and Peebles is given as follows: 1891, 11,810; 1901, 9,481, a falling off of 2,329. Again taking a fair approximation from the census returns for Scotland for 1891 and 1901, the decrease of workers for the woolen and worsted trade cannot be less than 8,000.

Wm. Murgatroyd: In our district if there is a concern to sell (and it must be a well-fitted up concern, up-to-date) it is well known that it will not fetch more than 25 per cent. of what it has cost. They give more for public houses in our district than they do for a factory.

Howard Clay: Prior to the McKinley tariff the trade of Halifax, ten years ago, was almost exclusively a foreign trade with the United States through Bradford and Leeds. Since then a good many makers have been forced into the home trade, so that Halifax now competes to some extent with other districts of Yorkshire. Since 1893 there has been in Halifax a diminution of quite 50 per cent. of the looms of the coating trade.

WAGES.

Comparisons between wages in English and foreign countries are fairly represented by the following extracts:

Francis Willey: There is in some measure a scarcity of child labor, but there ought not to be: if they were fairly well paid the labor would be forthcoming. I contend the wages paid are not sufficiently remunerative to the work people. A great many of the unemployed are practically kept by their women and children.

J. K. Empsall: America will never, I think, be a formidable factor until wages are reduced there. If they dump, of course they might; but the wages there are probably 50 per cent. higher than with us.

A. J. Sanderson: I asked a friend in Germany to let me know the wages in the woolen factories there, and he sent me the following as being general in Germany: Working hours, 64 per week; wages received: male weavers, 20s. to 22s.; female weavers, 18s. to 20s.; skilled spinners, 20s. to 23s.; boys, 12s. to 13s.; unskilled laborers, 13s. to 15s. per week.

PIRACY OF DESIGNS.

The opinion was frequently and emphatically expressed that a serious evil with which English manufacturers have to contend is the stealing of their designs by foreign competitors, who are protected by high tariffs.

F. Learoyd: We go to considerable expense in new designs, and we find these new designs pirated directly they are on the market, sometimes before the goods are made, especially in America. This is because they have not the originality; they obviously find it cheaper too. The taste of the Englishman leads all other countries in men's wear.

James Mackay: We make new patterns every six months to meet the taste of the trade, and the Germans and the Americans immediately copy them. I have been told that there are certain houses that will obtain your patterns under the pretence of giving you an order, and then the patterns find their way to America and are sold to the manufacturers. They copy them as near as they can.

J. H. Kaye: America, France, Germany and Austria pirate our specialties and designs and copy them in their own factories. We are unable to protect ourselves from such flagrant injustice. We are obliged to expose our designs nearly twelve months before the goods are actually worn, and immediately the designs are exposed these foreign manufacturers obtain the designs we have produced at enormous cost, and forthwith reproduce them without let or hindrance. This is a deliberate policy practiced year after year.

A. J. Sanderson: A customer of ours, a Canadian, was going over to America, and on the same boat was an American merchant with whom he was acquainted. They had both been in this country buying woolen goods. In the middle of the journey they began to talk to each other about their business, and the American went down and brought up a great heap of patterns, which he was supposed to be taking over to order goods from, and said to him, "Look what a lot of the very best styles in England I have got with me to get made over in America in domestics." That is just to show what is done.

THE CANADIAN PREFERENTIAL TARIFF.

Canadian preference to imports from Great Britain was very popular with all the witnesses that expressed an opinion upon it. They spoke of the increase in British trade

with Canada since the preferential rates were adopted, but several witnesses expressed a fear that Canada would adopt a protective policy and build up Canadian industries by excluding British goods:

J. Peate: Colonial preference, as evidenced by what has occurred with regard to Canada, is bound to be favorable in all its effects.

W. H. Mitchell: If Canada develops her wheat growing area, she will increase her consuming power faster than she can possibly increase her consuming power in these things (woolen goods), unless she were to put on a very high tariff like the United States. If we can come to terms with a country like Canada, we shall lead them to try to develop their pastoral and agricultural resources, in which case they will send us the food we want, and they will take our manufactured goods.

J. H. L. Baldwin: A preferential arrangement should be greatly to our advantage. We have had an instance of that in Canada.

Martin Albrecht: Canadian preference has resulted in an increase of business generally.

J. E. Haggas: We find a great advantage from the preference that Canada gives us.

WE KNOW THEM.

One difficulty that manufacturers in every country have to contend with is a prejudice in favor of foreign goods. In England it may be French goods that are superior; in France, Belgian or German goods; in Germany, French goods; and in America, European goods. This prejudice controls so many people that traders, and particularly the custom tailoring trade, cater to it either by selling foreign goods, or by selling domestic goods as foreign. That the English woolen manufacturer recognizes this feeling and profits by it is shown by the following testimony:

W. H. Mitchell: There are people in the United States, as there are at home, who would probably rather pay a high price for an article than a low price, and if you can offer them something that they cannot make at home you can sell it for a time. There is a certain amount of preference in America in favor of English goods. If we had anything like a moderate duty there we could employ the whole of our mills in Bradford without any difficulty. I am sure they are not going to reduce that duty; they have been going to do it for 40 years, but it has not come yet.

LOSSES BY SHORT TIME.

The loss of the woolen trade by English manufacturers bears especially heavy on them because of the increase in cost resulting from a decrease in production. It is only when a mill is operated to its limited capacity that goods are produced at the lowest cost. This point was brought out by several witnesses:

J. Peate: The effect on the price of our goods to the consumer in England if a 10 per cent. duty were imposed on the foreign competitors' goods would be almost nil. We want more trade and not higher prices. If we could work up to our full capacity, our powers of cheap production would more than neutralize, so far as the consumer is concerned, the 10 per cent.

Wm. Murgatroyd: Our standing expenses such as rates, management, insurance and nearly every expense of a costly nature, are just the same whether we run full time or half time, and the great point with us in making cheaply is to have plenty of work.

James Mackay: It makes a tremendous difference in the cost as to whether you are running full time, or running slack partly—two-thirds of the time. In working full time the cost per yard in wages and standing expenses, such as foremen, driving power, rent, rates and taxes, works out to about 10 3/4 d. per yard; but if you cannot run your mill full time, you have the same standing expenses, and if you are working, say, two-thirds of the time, it is costing you 1s. 3d. per yard to produce.

Joe Benn: Lack of continuity of employment is the cause of one of the greatest expenses. This last year, owing to this cause, I have lost an average of £4 on each loom, which would not have been the case had I been fully employed, that is to say, the costs of production have been increased to a very large extent, owing to many looms not being required, and we cannot, therefore, sell as cheaply as we could if we had more and freer markets.

Lack of space prevents us from extending these extracts to other subjects connected with the tariff. The testimony possesses additional value because of the fact that the witnesses told their experiences. Coming as it does from English sources, it confirms in an especially striking manner the wisdom of that policy of protection that finds its best expression in the Dingley tariff law.

Patents in Panama.

We have received from a firm in Panama a printed statement bearing on patent rights, trademarks, copyrights, etc., in that country. It is entitled "The German Peril," and states that a German company with large capital is about to establish a plant in Panama to manufacture all standard articles now made in America that are not protected by patents in Panama. According to this circular, under the Panama law the patent is granted to the

first applicant regardless of the rights of the original inventor or patentee in other countries. The circular further states that several German companies have already made application for patents, trademarks and copyrights on American and English industrial and literary property, expecting to obtain large profits from the manufacture and sale of the goods in Panama.

In view of the probable development of trade and industry in Panama during and after the building of the canal, this warning and advice to American manufacturers to protect their rights on the isthmus deserves careful attention.

Amending the Philippine Tariff.

The Philippine tariff bill framed by the War Department and passed during the last days of the 58th Congress, made certain changes in the classification of cotton goods that have resulted in serious injury to our export trade. It is estimated by exporters that the shipments of closely woven cotton goods to the Philippines have declined 90 per cent. since the present act went into effect. The changes were doubtless made with the best of intentions, but were embodied in the bill on the advice of a single firm, without due consideration or previous submission in intelligible form to the cotton trade.

To correct the mistake, Congressman Sereno E. Payne, of New York, has introduced House Bill No. 13,104, which is approved by the Merchants' Association of New York and by the cotton trade in general, including, we are creditably informed, the firm that suggested the objectionable changes in last year's bill.

For years the Philippines have imported large quantities of English splits woven in two or more widths on wide looms and split apart before shipment. Cotton goods are not made this way in America to any considerable extent, and in order to bring our wide goods under the lower rates of paragraph 117, that paragraph was changed to include cloth up to 40 inches in width instead of 25 1/2 inches. This provision, however, has not been sufficiently effective, and as a result the Payne bill restores the width limit to 25 1/2 inches, but imposes a surtax of 100 per cent. on splits, as follows:

> Textiles having a false selvage, on either one or both sides, shall be considered as goods improved in condition, and shall be liable to the duties leviable thereon, plus an additional surtax of one hundred per centum. This provision applies to all cotton fabrics.
>
> Note.—By a false selvage shall be understood an edge obtained by cutting, ripping, tearing or otherwise splitting the textile in the direction of the warp.

Last year's bill also changed the classification by warp and filling threads per square inch in paragraphs 117, 118, 119 and 120, which relate to plain and fancy cotton cloths. These changes will be understood by arranging the three forms of paragraph 117 in parallel, the weights and measures being reduced to American equivalents in order to avoid the mistake of last year in expressing them in metric terms, unintelligible to the textile trade, in which form the mistake easily escaped detection:

THREADS PER INCH AND RATES PER POUND.

Old law	Present law	Payne bill
(*a*) Up to 76 threads, 4½c	(*a*) up to 76 threads, 4½c	(*a*) up to 76 threads, 4½c
(*b*) 77 to 127 threads, 6½c	(*b*) 77 to 105 threads, 6½c	(*b*) 77 to 131 threads, 6½c
(*c*) 128 to 160 threads, 8c	(*c*) 106 to 160 threads, 8c	(*c*) 132 to 144 threads, 8c
(*d*) 161 or more threads, 13c	(*d*) 161 or more threads, 13c	(*d*) 145 to 161 threads, 10½c
		(*e*) 161 to 186 threads, 13c
		(*f*) 187 or more threads, 14½c

The same classification by threads per inch is maintained in each of the three measures for paragraphs 117, 118, 119 and 120, so that the above parallel exhibit illustrates all the alterations in such classifications made by the present law and also those proposed by the Payne bill. The classification in the latter is made somewhat finer and the rates slightly raised, but these modifications do not affect the object of the measure, which is to reduce the tariff on standard American goods imported into the Philippines, such as 64 × 64, 64 × 60 and 56 × 56.

The Payne bill, H. R. 13,104, is of great importance to the cotton industry, and if passed is calculated to promote our exports of cotton goods to the Philippines. For this reason every one interested in encour-

aging the domestic industry, and especially every textile manufacturer, should write to his representative in Congress urging the prompt passage of the measure.

Readjustment in the Cotton Industry.

On January 1, 1905, middling upland cotton was selling at 7 cents a pound in New York, the lowest point reached during the decline caused by the 14,000-bale crop of 1904-05. For the year following that date the movement was almost uninterruptedly upward, and on January 1, 1906, the New York price was 11 3/4 cents. This increase in the cost of raw material has not been accompanied by a corresponding advance in the selling price of yarn and cloth, and as a consequence, the prospective profits of cotton manufacturers were materially reduced by the year's changes in cotton values. An English manufacturer illustrates the altered conditions by comparing in the Manchester Guardian, prices and profit margins on 32s twist for the two dates named above. His figures are as follows:

Jan. 1	Fine Middling Texas	Cost Cleaned	32's Twist	Margin on Cleaned Cotton
1906	12.8	14.72	17.5	2.78
1905	8.	9 08	14.	4.92
Change	4.8 inc.	5.64 inc.	3.5 inc.	2.14 dec.

While the unequal advances in the raw material and finished product have resulted in lowering the margin over 43 per cent., it should not be forgotten that the margin of 4.92 cents in January, 1905, was due to abnormal conditions brought about by a record crop. A record crop of 14,000,000 bales had depressed the price of cotton more than the price of yarn. This gave the English manufacturers an opportunity, which may not return for many years, if ever, of stocking their mills with 8-cent cotton and selling the manufactured product on a basis of 10 or 11-cent cotton. That this opportunity was improved is demonstrated by the large dividends declared by English cotton mills in 1905.

To complain now, as many English manufacturers are doing, of the shrinkage in the margin of profit is to assume that abnormal conditions should prevail. The reduction of the margin is but a result of the readjustment of conditions by which the profits of the whole cotton industry have been more equitably distributed.

Weighting Silk.

The committee appointed last September by the Silk Weighting Congress at Turin have issued a report on the question of controlling the practice. The committee state that, possessing no power to enforce rules, they are compelled to confine themselves to recommendations, and call attention to the fact that all countries have now civil and criminal statutes, which to a greater or less degree bear upon the abuses of weighting silk fabrics.

The committee is of the opinion that no disadvantage results from the weighting of silk with vegetable materials, but that excessive weighting with mineral substances should be forbidden. In view of the damage that results to the trade from the abuse of weighting goods, it is recommended that the trade study the question to determine the consequences of this practice. Attention is called to the fact that in order to check the abuse the buyer must be in a position to determine the extent of the load, either by a statement of the manufacturer or by chemical analysis.

The committee invited the silk conditioning establishments of Milan, Lyon, Zurich and Crefeld to submit to the silk weighting congress to be held at Como, Italy, this year, methods for determining the loading of silk goods. This invitation was accepted by the Milan and Zurich establishments and declined by the Lyon Chamber of Commerce; the German committee stated that the consent of the German society must first be obtained. It was recommended that information regarding silk weighting in different countries be obtained and presented to the coming congress. The suggestion was also made that a report be prepared regarding the instruments now used for testing silk goods in order to bring about uniformity if possible. The owners of silk testing instruments are asked to send them to the Milan International Exposition, which is to be held in April, 1906.

The committee are of the opinion that standards should be established for the boil-

ing-off process similar to those for conditioning textiles, and silk conditioning establishments are invited to aid in the adoption of methods for testing raw, thrown and colored silk.

Conditioning Japanese Silk.

A movement has been started in the silk trade to establish and enforce regulations requiring shippers of raw silk from Japan to sell the material by conditioned weight. Last year, 1904, there was imported into the United States 16,578,005 pounds of raw silk valued at $54,879,276, coming from the different countries in the following proportion:

	Weight.	Value.	Per cent. by value.
Japan ...	7,924,977 lbs.	$27,141,103	49.5
Italy	3,550,134 lbs.	13,261,725	24.1
China ...	3,527,377 lbs.	9,972,386	18.2
France ..	664,609 lbs.	1,912,120	3.5
Other ...	910,908 lbs.	2,591,942	4.7
Total,	16,578,005 lbs.	$54,879,276	100

Conditioning of silk is of especial importance because of the high cost of the material, the average for last year's imports being 3.25 per pound. All silk from Italy and France is sold by conditioned weight, the standard of moisture being 11 per cent. of the dry weight. These two countries supply but 27.6 per cent. of the imports, which leaves 72.4 per cent. to come in and be sold by the actual weight, which may include a considerable amount of water. Nearly half (49.5 per cent.) comes from Japan and this makes the movement to require the conditioning of Japanese silk of especial importance. The Silk Association of America is considering the best course to take to bring about the reform. The objects of the movement are stated in the following resolutions adopted by the Raw Silk Jury at the St. Louis Exposition:

"Resolved, That in the interest of both the Japanese producers and the American consumers of raw silk, our fellow juryman, Mr. Adachi of Japan, is hereby respectfully requested to use every effort and do all within his power to have shipments of raw silk from Japan tested by the Imperial Japanese Conditioning House with properly authenticated certificates for each bale, to the end that condition weight shall become the commercial usage in all transactions between the two countries.

"Resolved further, That a copy of this resolution duly signed be delivered to the said Mr. Mototaro Adachi and a certified copy to the Silk Association of America as a matter of record."

In spite of the variations in the yearly product of Japanese silk the record since 1878 shows a steady increase which has brought the total from 3,022,658 pounds in 1878 to 15,345,197 pounds in 1902. Japan's best customer for raw silk is the United States which now takes two-thirds of the total product. France and Italy come next in the order named, the classification for 1902 according to countries being as follows:

United States	6,504,658 lbs.
France	2,100,334 lbs.
Italy	1,720,640 lbs.
England	61,752 lbs.
Switzerland	82,092 lbs.
Canada	153,560 lbs.
Russia	117,144 lbs.
Other	30,708 lbs.
Total	10,770,888 lbs.

The silk industry is scattered all over Japan and as the small producers are unable to deal directly with the large exporters in Yokohama, there is an important internal trade in silk by which small dealers buy from first hands and dispose of the material to the large export firms. For years previous, the need of a silk conditioning house was generally recognized in Japan, but the first establishment of the kind was started only ten years ago, in 1895. It is equipped to test silk in all necessary particulars including the net weight, moisture, size, number of knots, strength, elasticity and loss in boiling off. The number of tests made by the Yokohama conditioning house since its equipment are as follows:

1896....1,236	1900....11,189
1897....2,643	1901....33,242
1898....4,844	1902....57,158
1899....9,281	1903....55,971

The increase in 1901 as compared with the preceding year was due to an agreement between the silk dealers and exporters, made

to remove certain abuses which had crept into the trade. It provides that an allowance shall be made when the condition of the silk is below a certain standard. In spite of this rapid growth the silk tested at Yokohama is but a small part of the Japanese product. The existence of an official conditioning house in Japan is a material gain to those who are trying to establish the practice of conditioning all silk exported from that country.

Cotton Contracts.

The Chancery Court at Manchester, Eng., has recently made a decision which, it is generally believed, will have an important effect on the rules governing the Liverpool Cotton Association. The Societe Cotonniere, of St. Etienne, France, sued a firm of Liverpool cotton brokers to recover losses sustained by the plaintiffs in operations on the Liverpool Exchange between 1902 and 1904. The defendants claimed that both they and the French company were acting as principals. The plaintiff asked for an accounting on the basis that they were the only principals and that the Liverpool firm was acting for them as an agent or broker. The Chancellor's decision giving judgment for the French plaintiffs was in part as follows:

On October 4, 1902, the plaintiffs gave the defendants instructions to buy certain cotton on the Liverpool Cotton Exchange, or through the Liverpool Cotton Association. The defendants reported that they had done so, and subsequently sent to the plaintiffs what was known as the "green" form of contract. On the 24th of April the defendants received from the plaintiffs instructions to sell a similar parcel of cotton on their behalf. It was suggested by the defendants that the delivery contract note was not consistent with the relations of principal and agent, or broker and customer, or broker and client, but was consistent only with a relationship existing between the parties as principals and principals on each side. Starting with the admission that the relationship at the commencement was that of broker and client, broker and customer, or agent and principal, it was important to see, first of all, what the contract note said upon the face of it, and the circumstances under which the Cotton Association came to supply and use this particular form of note. It was headed "American Cotton Delivery Contract Note." Then there were the words "Brokers' contract note to client.—Liverpool, 4th April, 1902.—Messrs. the Societe.—Dear Sire,—We have this day sold to you 141,600 lbs. of American cotton, net weight, to be contained in 300 American bales, to be delivered in Liverpool during July and August, 1902." It was suggested that that was consistent, and consistent only with the idea of the parties being principals, and nothing more.

The cotton Association formed in effect the Cotton Exchange in Liverpool, and recognized a number of different kinds of transactions in different kinds of cotton. It recognized transactions where there was an intention from the very first to buy the cotton. It also, he believed, contemplated cotton being actually shipped as raw cotton to other places to be manufactured there. But it also contemplated a kind of business which, although it was saved, by reasons which he would give, from being gambling in law, was, in fact, as much gambling as though it were done on the Stock Exchange, at Monte Carlo, or in the betting ring on a racecourse. It was the kind of business known as "dealing in futures," but it was saved from being gambling in the eye of the law because there was an obligation on the part of the seller to deliver if required, when the time came for delivery, and an obligation on the part of the buyer to accept delivery if the seller required him to do so.

He had come to the conclusion in this case that the whole of the dealings here were on the footing of the defendants being brokers or agents and of the plaintiffs being principals, and he therefore gave judgment directing the accounts to be taken on that footing.

It is stated that because of this decision the Liverpool form of contract, which was framed to make the broker a principal, will be changed.

Colonial Cotton.

At a recent meeting of the British Cotton Growing Association, it was reported that 50 bales of this season's cotton had arrived from Barbados and been sold at a price very satisfactory to the grower. Lagos was credited with 188 bales, of which 56 bales had been sold at 10 points off middling American. These receipts were the only substantial encouragement offered at the meeting. The chairman referred to an interview with Gov. Probyn of Sierra Leone, in which the latter expressed the opinion that "this colony would ere long produce a very large quantity of cotton."

Among the curious methods adopted in England for encouraging the growing of cotton in distant colonies, one, mentioned at this meeting, consists in the awarding of medals and diplomas to colonial cotton cultivators. It was gravely announced that a lot of medals had been sent to the West Indies and that the government had decided to give a diploma with each medal. The rewards of merit hung on the breast of the colonial cot-

ton planter are expected not only to stimulate him to greater efforts, but to awake in his less enterprising neighbors an ambition to raise cotton and likewise wear a medal from Manchester. It was reported that the subscriptions to the stock of the British Cotton Growing Association amounted to 220,000 shares of the 500,000 authorized. This is approximately $1,000,000 paid in.

Spindles and Consumption of Cotton.

The statistics in the first cotton census of the International Cotton Federation, which we published last month, show wide variations among the different countries in the relation of spindles to cotton consumed. The following table shows the Federation figures for spindles, total annual consumption of cotton, and amount consumed per spindle for each country.

	Spindles	Annual Total Bales	Consumption lbs. per spindle
Gt. Britain,	46,000,000	3,600,000	39.1
Germany,	8,800,000	1,625,000	92.3
France,	6,200,000	990,000	79.8
Italy,	2,760,000	770,000	139.5
Spain,	1,700,000	351,000	103.2
Switzerland,	1,456.546	103,600	35.5
Belgium	972,000	159,300	81.9
Portugal,	334,190	72,229	108.0
Total for Europe,	68,222,736	7,671,129	56.2
U. S. North,	15,350,000	2,112,000	68.8
U. S. South,	8,500,000	2,063,000	121.3
Total for U. S.,	23,850,000	4,175,000	87.5

A prominent English merchant and manufacturer refers to this showing of production in European mills as "a revelation to most people engaged in the cotton trade." If that is the case, cotton traders are surprisingly ignorant of the conditions in their own trade, for the Federation census of cotton consumption merely calls attention to well-known facts. The English manufacturer tried to make the showing of the census more remarkable by stating that "if the 'counts' spun in Great Britain were no finer than those spun in Germany, our (British) consumption of cotton would exceed 8,000,000 bales per annum." It is to be hoped that the English spinners will refrain from spinning to the German size, for they would then take all of the American cotton available for export, and if they should conclude to spin at the Italian rate they would use nearly 13,000,000 bales, or the entire American crop.

The variation in the rate of consumption is due to the difference in the size of the yarn spun, which in turn is determined by the requirements of the markets in which the product is sold. Even greater variations exist between individual mills. The 39 pounds per spindle used in English mills is the average for fine and coarse spinners, and by contrast with the consumption in other countries shows to what an extent the fine cotton yarn trade has centered in Lancashire. The variation in the running time in different countries is a factor in the problem, which, in the case of India and Japan, makes a comparison with Europe and America valueless. Thus India, with 5,118,000 spindles, consumes 2,030,000 bales of cotton, or 198 pounds per spindle, while Japan, with 1,027,817 spindles, uses 701,987 bales, or 341 pounds per spindle per year.

The New England Cotton Manufacturers' Association.

Notice has been given that the eightieth meeting of this Association will be held at Boston on Wednesday and Thursday, April 25 and 26. Efforts are being made to arrange an especially interesting program.

More than 400 Philippine plants have been reported of which the fibres have some economic use.

Will Bear Watching.

Twenty-four propositions to amend the Dingley Customs Administrative Act have been submitted to the Secretary of the Treasury by a committee of the Merchants' Association of New York. The efficiency of a protective tariff depends not only on the size of the nominal duties imposed, but also upon the method of administering the law and construing its provisions. Illustrations of how the protective features of a tariff law can be nullified by rulings of low tariff officials were supplied in profusion by the second Cleveland administration under the McKinley bill.

To prevent a recurrence of such conditions and to make sure that a protective tariff shall protect as long as it remains on the statute book, regardless of the policy of the administration in power, the Dingley bill was supplemented by what is probably the most scientifically stringent administrative act ever enacted. Its efficiency is indicated by its unpopularity in foreign countries. We have learned to love it for the foreign enemies it has made. Under it the officers of the government must administer the Dingley law in its protective spirit as well as letter, or violate their oaths of office.

One illustration of this is found in section 3, which provides that every invoice shall be produced before the American consul of the district from which the goods are exported to the United States and that the exporter shall state "the actual market value or wholesale price thereof at the time of exportation to the United States in the principal markets of the country from whence exported." The United States Supreme Court has decided that but one market value can be recognized, and under the section from which we have quoted the appraisers adopt the highest market value in verifying the declarations on consular invoices.

This is one of the many provisions of the Dingley Administrative Act that have called forth protests from foreign exporters. It has been a most effective means of preventing undervaluations and of keeping the Dingley tariff bill what it was intended to be, thoroughly protective to American industry. It is at this provision of section 3 that the first proposition of the Merchants' Association of New York is aimed, the amendment proposed being as follows:

> Hon. Leslie M. Shaw, Secretary of the Treasury:
>
> Sir: . . . We have the honor to submit the following propositions:
>
> First: In Section 3, line 18, et seq., in the words "the actual market value or wholesale price thereof at the time of exportation to the United States," it is proposed to insert after the words "price thereof" the words "for exportation," so that it shall read, "the actual market value or wholesale price thereof for exportation at the time of exportation to the United States."
>
> It is well known that patented articles in foreign countries, as well as our own, have frequently two or more distinct market values, i. e., one price for home consumption in the patented territory, and another for export.

This proposition of the Merchants' Association would open wide the door for undervaluation and the dumping of foreign goods into the American market. It is so bald that it might well have been labeled "a proposition to nullify the protective features of the Dingley bill." It is followed by twenty-three other clauses, several of which contain the same provision, that the words "for export" shall be inserted after the words "value or price." The first proposition, given above, is enough, however, to put the friends of protection to American industry on guard against this insidious method of nullifying the Dingley bill.

At present both our tariff law and administrative act are receiving the highest form of approval by being imitated in foreign countries. Canada is enforcing more stringent regulations against dumping. In a few months Germany will be doing the same thing under the new German tariff act. With these examples before us, and with the United States enjoying an unparalleled degree of prosperity under protection, it is no time to lower the Dingley rates by crippling the Dingley Administrative Act.

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

A large number of buyers are now in the market, and the new lines shown by the various selling agents are receiving their attention.

There are yet to be opened a number of the better grade lines, and several of these will not be generally exhibited before the middle of next month.

Selling agents are in a position to judge very accurately the classes of merchandise the buyer can handle, and lines are shown and often sold before any general opening is made. There is no great enthusiasm manifested,—criticism is heard oftener than praise. Prices are unquestionably abnormally high; fabrics are deteriorated and manipulated so that old standard numbers are no longer recognized. Manufacturers point out the advance in the price of wool and of cotton and labor: yet many of the buyers claim that the quotations are higher than is warranted by all the above factors.

The new lines now opened consist of mercerized worsteds, medium grade fancy worsteds, clays, serges, and piece dyes. The majority of heavy-weight cassimeres are open, and additional lines of thibets are shown from day to day; and also lines of fancies in all wool varying in price from $1.50 to $3.00.

Orders booked for staples, such as kerseys, meltons, friezes and allied lines are spoken of as being satisfactory, but the principal interest is centred in the mercerized worsted lines around the dollar mark; notwithstanding the complaint and criticism which this fabric has had to bear, it is noteworthy that it is now receiving more support from the clothier, and hence from the consumer than any previous season, the reason for this popular favor is entirely due to the sightly appearance of the garment at a popular price.

It does not seem that wool fabrics are yet receiving the support to which they are naturally entitled, and the lines shown at $1.25 to $1.50 contain much more merit and value than manipulated worsteds at the same figures. Among the lines opened this week are Coronet Worsted Company and the Plainfield Woolen Company. The mercerized fabrics of the Coronet range from 92 1/2 cents to $1.45 and the all worsted fancies from $1.52 1/2 to $2.00. The 16 oz. clays at $1.50 and the unfinished worsted at $1.62 1/2 made by the Plainfield have been sold up and withdrawn.

Morton H. Meinhard & Company are showing lines from the Cleveland Worsted Mills ranging from $1.25 to $1.55 for mercerized fancies; and from $1.57 to $1.65 for mostly pure worsted goods.

The American Woolen Company are showing the full lines of the Washington and Fulton mills; the numbers consist of staples as well as mercerized fancy worsteds, ranging in price from 87 1/2 cents to $1.15.

John M. Harris & Co. have opened a line of wool goods at 92 1/2 cents and 95 cents, and the Kent goods from $1.50 to $2.00.

Laurie Mann & Drowne are showing Peacedale mixed silk and worsteds at $1.60 and $1.65.

Freeland and Wilson are showing Oxford meltons at $1.72 1/2 and Oxford kerseys at $1.82 1/2.

The Jamestown Worsted Mills are showing heavy-weights at 92 1/2 cents to $1.25; all worsted goods at $1.77 1/2, piece dyes at $1.22 1/2 and raincoatings at $1.20 to $1.55.

Nixon and Thickens have opened lines of the Payton Manufacturing Company, 12 ounce thibets at $1.02 1/2, 16 ounce $1.20, $1.25 and $1.32 1/2.

H. W. T. Mali & Co. are showing Marston mercerized worsted at $1.25 and $1.32 1/2 and also a line of Carr suitings and overcoatings at $1.15.

DRESS GOODS.

There is comparatively little doing for fall. Prices are gradually advancing, and some of the prominent mills are known to be in a strong, safe position, more especially those who are recognized as leaders in the production of broadcloths. There is every indication that this fabric will continue in popular favor for another heavyweight season. Next in favor will be the fine worsted and wool dress goods, such as prunellas, french serge and poplins. Henriettas continue in moder-

ate request, and the demand will probably continue for some time.

Plain weaves promise to occupy the same strong position during the fall of 1906 as they have done during the past year, and present indications are that the bulk of the fancies will be stripes and jacquard figures on a background of the same color but of a

and shadow checks on the order of Figs. 1 and 2 will be the leading suitings for spring. The numbers illustrated above deserve special mention for their perfect style and finish. These fabrics are made by the Togoyama Worsted Mills and sold by Fred. W. Thompson through the commission house of Fleitman & Co.

FIG. 1.

FIG. 2.

slightly different shade. In color blue leads from navy to ciel; green, plum, myrtle green, royal blue and indian red are popular, these last three are the best leading shades; Alice blue, old rose and military greys are also considered good for current wear.

Gray overplaid crashes and gray mixtures consisting of small checks, hairline stripes

The vogue for white and cream promises to be equally as prevalent as past seasons, and the present request for cream serges and mohairs has already exhausted the visible supply, with several numbers of serges sold six weeks to two months ahead.

Such staples as cotton warp cashmeres, made by the Atlantic Mills and the Lorraine

Manufacturing Co. are sold several months ahead, and agents are only willing to book orders for fall delivery.

The tendency is toward batiste weight in all fabrics.

SILKS.

The depression which has existed in the silk division of the market since last July is now giving way to markedly improved conditions, and the general opinion expressed by the various manufacturers is that the critical period is over. There have been no large lots sold through the auction rooms, but several large operators have been enabled to secure lots at practically their own prices, and even today there does not seem to be any margin left to the manufacturers, as last year's quotations cannot be secured while the price of the raw material is fully as high as then ruled.

Among the new silks for spring there is no radical change in either weaves or in fancy designs. Taffetas in plain and fancies retain favor; and manufacturers count on plain taffetas in staple shades, and white and cream for a large proportion of the spring selling. Moire and Tartan plaids have been eliminated.

Among the collection of fancies, the prominent are silver gray embellished with black hair line stripes, and with small jacquard designs in the same tones, also gray and black pin checks with pompadour embroidery as shown in Fig. 3. This is shown by M. C. Migel & Co. at 87 1/2 cents, 19 inches wide. Radium silks and goods possessing soft lustrous finish are introduced in 24 and 44 inches wide, and are largely sold for evening wear purposes.

COTTON WASH GOODS.

For several years the demand for cotton washable materials has been steadily on the increase, and manufacturers have exerted every possible effort to keep pace with the requirements both in texture and finish, until now the business accomplished aggregates an enormous volume. It is not a long time since the better grade of fancies were entirely imported lines, but our domestic manufacturers have made such rapid strides that foreign numbers are restricted to organdie lisse and high novelties of that order. The fabrics shown this season by the Arnold Print Works, the Galey & Lord Manufacturing Company, and the Aberfoyle Manufacturing Company and other domestic manufacturers, possess high merit and deserve the highest commendation.

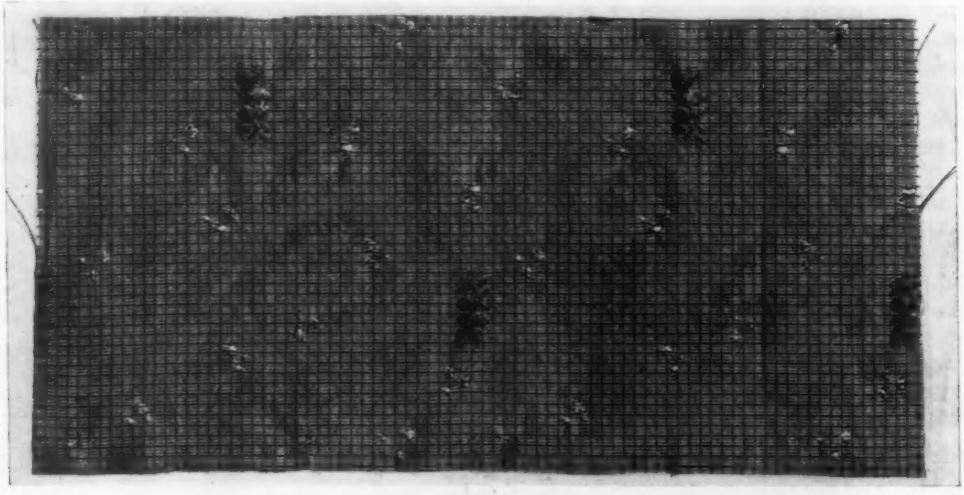


FIG. 3.

The use of mercerized yarns as well as silk has been extensive, as the names of the various fabrics denote—such as "Polka de Soie," a fabric composed of silk and cotton on a checked ground with large silk polka dots, "Quadrille Silk Organdie," a fabric of silk

and cotton, check ground with handsome floral designs, producing a lattice effect; "Corded Silk Chiffon," "Shimmer Silks" and "Soie Radiant." Most of the above are to retail at 25 cents, the price of the agents being around 16 1/2 cents. The movement of staple tickets of dress ginghams has been extensive, and the question of the moment is whether there will be enough to fill the requirements as the season progresses.

There is a scarcity of staple check gingham; the jobbers are unable to fill their orders, and agents will only accept business at value with deliveries uncertain.

The American Printing Company has advanced all lines of prints 1/2 cent, and other printers will most probably follow.

AMERICAN WOOLEN COMPANY'S PRICES.

The American Woolen Co. opened their lines of standard clays and serges at a material advance over last year's prices. Although the increases seem large they are probably not out of proportion to the increase in the cost of production due to the advance in wool and wages. The following list shows the present prices of the leading grades, and a comparison with 1904 and 1905 prices on standard clays:

STANDARD CLAYS

Style No.	Weight	Fall, 1906.	Fall, 1905.	Fall, 1904.
317	12 oz.	$1.35	$1.17½	$1.00
338	14 oz.	1.47½	1.27½	1.10
200	16 oz.	1.62½	1.37½	1.20
191X	18 oz.	1.80	1.57½	1.35
191	20 oz	1.95	1.70	1.47½

LOW GRADE CLAYS

Style No.	Weight.	Fall, 1906
312-36	12 oz.	$1.05
314-36	14 oz.	1.17½
316-36	16 oz.	1.27½

MEDIUM QUALITY CLAYS

612-5	12 oz.	$1.15
614-5	14 oz.	1.27½
616-5	16 oz.	1.40
618-5	18 oz.	1.50

SERGES

216-5	16 oz.	$1.12½
216-6	16 oz.	1.15

STANDARD CLAY MIXTURES

6116	16 oz.	1.85
6118	18 oz.	2.02½
6120	20 oz.	2.25

LOWER GRADE MIXTURES

4216	16 oz.	$1.50
4218	18 oz.	1.67½

CHEVIOTS

51X	$1.32½
61X	1.40

FOREIGN DRESS FABRICS.

Bradford, Eng., Jan. 1906.

Light colored grounds are conspicuous among the ladies' costume cloths most favored this spring. Involved checks of lighter

and darker yarn alternately are leading elements in design. Makers that belong more properly to the worsted class have introduced woolen filling to give the tweed character to goods on two-fold crossbred warps, along with mercerized twists in both directions.

Woven on fast looms goods of genuine quality are produced cheaply and a ready acceptance for the fabric shown at Fig 1, at 29 1/2 cents, 42 inches, has been found.

Another effort in checks by the same firm,

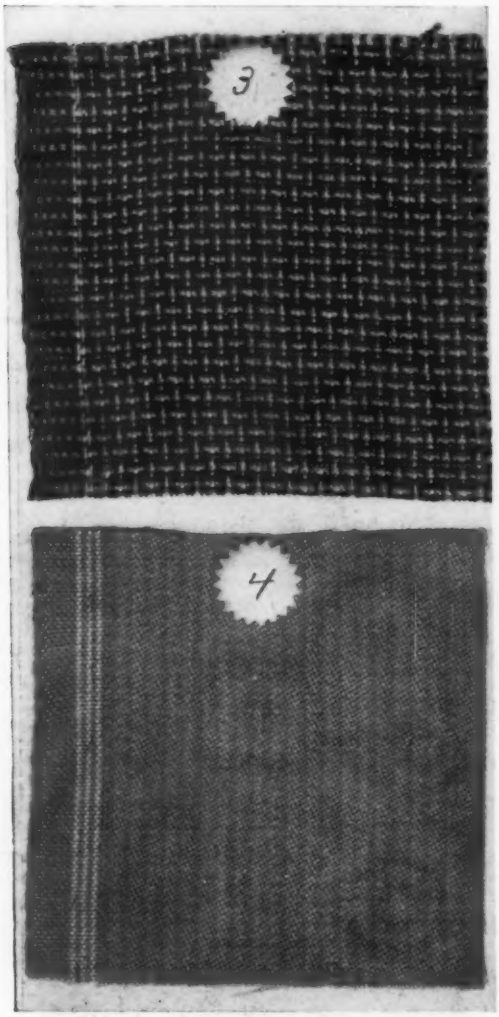
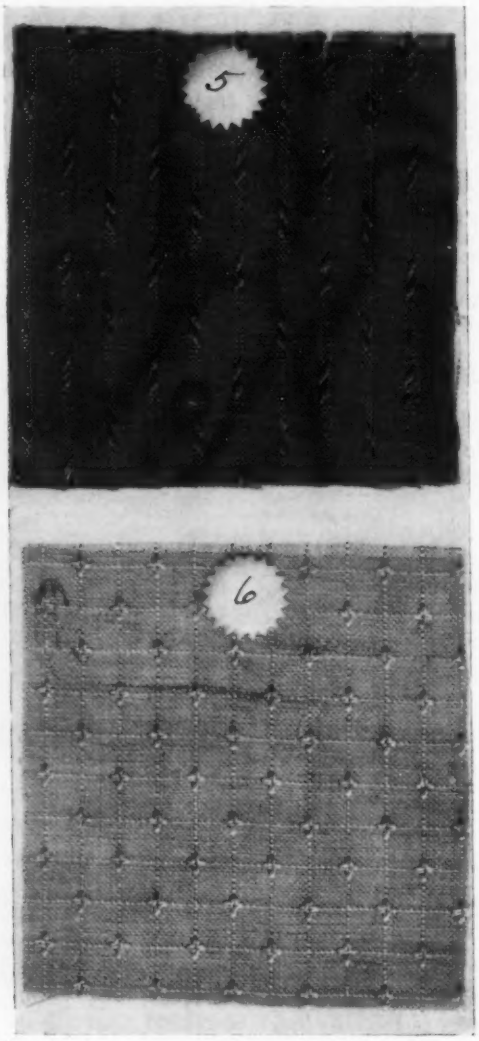


Fig. 2, resembles in coloring and character some of the cottons of American manufacturers that have sold well in the States. But instead of cotton a firm twist of medium worsted makes the warp; the filling is of single merino yarn. In a pure finish these goods have much to recommend them over cotton fabrics and they are not difficult to make. In 44 inches the mill price is 34 1/2 cents.

But possessors of light, speedy looms might well take a hint from a certain manufacturer, whose trade in fancy colored cottons of simple construction and neat design



is certainly not an unsatisfactory one. For 12 cents the purchaser gets a smartness worth double the money, Fig. 3. Two colors are used, the lighter of them a cheap mercerized yarn; the fuller shade a plain dye. Except for one end in opposite corners the small check is made complete by the cross-over. The construction is open enough to make the goods semi-voiles and, needless to say, has

the effect of making the weight of a piece very light. Australia and the Colonial markets are good for quantities of goods of this calibre, and Americans with suitable equipment, cheap cotton and intelligent finishers should have little difficulty in finding a constant demand for cloths of this broad type at home.

While Bradford has been eclipsing all recent records in its shipments of fabrics to America and virtually living on foreign demand, the Continental maker has been doing good business in our markets. Using silk where the English maker used to use lustre wool or mohair, the German is sending us fancy striped figures in dove, buff, blue, green, slate and such soft shades. The dye is not the least important factor in the success of these and one does not wonder that makers resent the ousting of their own cloths for really similar ones that foreign rivals make a little better. Broad distinctions are not to the point in discussing the success of these articles. The highest pitch of technical excellence in half a dozen different respects is needed to command the best business for fine plain and semi-plain stuff.

ARTHUR STONE.

The samples accompanying this letter represent six lines of dress goods, three English, two German and one French. We have analyzed them with the following results:

FIG. 1, ENGLISH, 29½ cts., 44 inches.

Weight, 3 $\frac{1}{16}$ ozs. per yard, 42 inches.
Warp, 39 threads per inch, dressed threads, 2/18 worsted, 2 threads, 2/20s cotton.
Filling, 30 threads, per inch, woven 6 threads, single 3½ rums, cotton and wool, 2 threads 2/17s cotton.
Weave, 4 leaf twill.

FIG. 2, ENGLISH, 34½ cts., 44 inches.

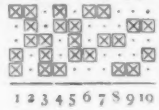
Weight, 3 $\frac{9}{16}$ ozs. per yard, 44 inches,
Warp, 54 threads per inch, 2/51s worsted.
Filling, 62 threads per inch, 2/47s worsted.
Weave, plain.

FIG. 3, ENGLISH, 12 cts., 44 inches.

Weight, 3 $\frac{7}{16}$ ozs. per yard, 40 inches.
Warp, 43 threads per inch, 2/36s cotton.
Filling, 42 threads per inch, 2 35s cotton.
Weave, plain and basket.

FIG. 4, FRENCH, 40 cts., 44 inches.

Weight, 5 ozs. per yard, 40 inches.
Warp, 107 threads per inch, 1/47s worsted.
Filling, 87 threads per inch, 1/50s worsted.
Weave,



1 2 3 4 5 6 7 8 9 10

NO. 5, GERMAN, 28 cts., 44 inches.

Weight, 3 $\frac{1}{16}$ ozs. per yard, 44 inches.
Warp, 68 threads per inch, 1/51s worsted.
Filling, 63 threads per inch, 1/53s worsted.
Weave, fancy.

NO. 6, GERMAN, 29½ cts., 44 inches.

Weight, 3 ozs. per yard, 44 inches.
Warp, 65 threads, 1/60s worsted and 2/45s silk, cotton No.
Filling, 66 threads per inch, 1/54s worsted and 2/42s silk, cotton, No.
Weave, fancy.
The sizes here given are as found in the finished goods.

BAD PACKING OF AMERICAN GOODS.

A government report from China by Special Agent Crist, calls attention again to the bad packing of American goods for export, and contrasts the American way with the right way as illustrated by goods exported from other countries. They show that in the matter of packing American manufacturers of cotton goods are as far behind the times as are American cotton growers. The contrast between the American and other bales of cotton goods reminds one at once of the contrast between the American and Egyptian cotton bales. The report refers to a wide variety of goods, that part relating to cottons being as follows:

Much of the American piece goods comes in machine-pressed bales, bound with eight, nine, or ten ropes. Other countries use iron bands with buckles or locked ends. There are many disadvantages and apparently no advantage, save that of cheapness, in the use of ropes, which are considered most undesirable by those engaged in foreign trade at this port. The principal disadvantage is that the goods arrive in such damaged condition as to at once place them at a higher price, allowing for consequent loss, than similar goods better packed. The allowance of claims for damaged cloth is a constant element in importing American baled goods, which does not figure prominently in the calculation of the prices of goods from other countries.

In looking over the stock of piece goods in a godown in Tientsin, which represented between 500 and 800 bales from different countries, it was found that about 60 per cent. of them were American product. In the course of their shipment and transshipment, from three to eight, and in many instances all, of the ropes had been removed from fully 80 per cent. of the bales in sight, with the result that from the consequent bursting the contents had become soiled through contact with dirt and mud. Much of the goods had been damaged through abrasion and tearing from exposure. This condition was the basis for a claim for discount by the Chinese merchant, which has to be entertained; and as no claim can be collected from the shipping company, the loss has to be sustained by the commission house. Baling with ropes is

considered inadequate protection to the goods, and does not admit of reimbursement for damages sustained. Some American manufacturers have adopted the metal strap baling system, the best and only appropriate method of baling goods for this market. There is a light-weight metal band used by some American mills that is better than any other in use. It appears to be made of malleable or wrought iron, is very strong in tensile strength, but is easily torn by the hands if started by a small cut on the side.

damage from that source. I have made some photographs of baled goods, which are transmitted herewith.

No. 1 shows an American bale with one rope remaining of the original nine. The contents have burst through the paper inner covering and the outer gunny cloth. This bale as it appears was on the customs landing at Tientsin and would pass to the godown of the importer and there be repacked before delivery to the Chinese merchant. Behind this bale are two India bales showing the

FIG. 1.

The metal does not rust by contact with water or dampness, as do ordinary iron straps. Rust frequently stains the goods. One expedient adopted by shippers is to coat both sides of the bands with either black or red paint, which materially reduces the liability to rust. All Indian bales are bound with iron straps having a covering of heavy red paint, as the vicissitudes of these goods are many, four months often elapsing between the time of shipment and arrival at this port from India; the course of the goods often requiring four transshipments.

English baled goods in most instances have as an added protection from abrasion a piece of tarred gunny cloth wrapped about the joint formed by the fastening of the ends. This materially reduces broad metal straps intact and the goods thoroughly protected.

No. 2. There are eight trusses of goods in a more or less dilapidated condition. This is a typical load, illustrating the average condition of the American truss. In almost every instance the ropes have all been removed, and if three of the iron straps remain that bind the two bales, it is looked upon as a favorable shipment.

No. 3. Bales of piece goods arriving from Holland. The heavy iron straps insure, in most instances, arrival in good condition.

The following article written for the Textile World Record some weeks ago by a New England manufacturer contrasts iron bands

and rope for baling and acquires additional interest because of the Crist report:

IRON BANDS VS. ROPE FOR BALING.

By James Dallas.

During the last three or four years interest in the use of iron bands and buckles in place of ropes on bales of cloth has been steadily increasing among mill men throughout the whole country, and now that several concerns have started to manufacture these bands under different trade names, and are indefatigable in their efforts to get mills to give their product a trial, a few words on the subject will doubtless be worthy of notice.

FIG. 2.

The claims for the band may be summed up into four, as follows:

1. That they will prove cheaper than rope at all times, and especially when the price of rope is as high as it is now.
2. That a more compact bale is obtained with iron bands than with ropes.
3. That there is a saving in favor of bands in labor in the packing room.
4. That a package is much neater in appearance when put up with iron bands.

Taking up these claims in the order they are given and referring to the first, in which it is claimed that the use of these bands will show a saving in cost as compared with ropes, it is to be said that investigation does not prove the truth of this assertion, as the best that can be said is that the honors are about even. One packing room foreman interviewed on the subject thought that the bands were very much cheaper than ropes, until complaints began to come in that the bands had been forced apart on several long-distance shipments, with the demand that if their use was to be continued a heavier band and buckle must be substituted. As the bands and buckles are sold by weight, the substitution of a heavier article gave less feet to the pound, so that when fresh figures were made it was found that the cost was about the same as it would have been had the bale been roped. Judging from this and other experiences, it is the writer's opinion that the saving in cost claimed by the band manufacturers has yet to be proven.

As to the second claim,—that of a more compact bale being obtained,—I venture the opinion that this is the strongest argument in favor of the band yet used. As is well

known, the freight rate on foreign shipments is fixed by amount of space used on the steamers, and not by weight, so that the less cubic inches a package measures, the cheaper the goods can be transported. It has been found by an experiment that the height of a bale fastened with bands is about three inches less than that of a bale of the same number of pieces fastened with ropes, so that fully to appreciate this saving in freight a little figuring is necessary, as follows: Suppose we have a roped bale with the cubic measurements 30 by 18 by 16. Multiplying these figures to get the number of cubic inches, and dividing by 1,728 (cubic inches in a cubic foot) gives five cubic feet as the measurement of the bale. Now take a banded bale containing the same number of pieces and the measurements would be 30 by 18 by 13. Figuring this in the same way, gives 4.06 cubic feet, a difference of practically one-fifth in the size of the two bales. So it will be seen that this tendency to secure a freight rate about one-fifth less than a roped bale is a very strong point in favor of the use of bands and buckles.

As to the third claim,—that a saving is made in packing room labor,—it can only be said that the remarks in reference to the first claim may properly be applied to this claim also. One packer said that his men were very much averse to bands when they were first introduced, and all tests made by him resulted in favor of ropes, but now that the men were more accustomed to the use of bands he thought the work was done fully as cheap as with ropes, and they had just as soon put up bales one way as the other. Many an improvement is condemned or delayed through this objection on the part of overseers and men to forsake old methods for new, and that the makers of these bands are running up against this kind of opposition I have not the slightest doubt.

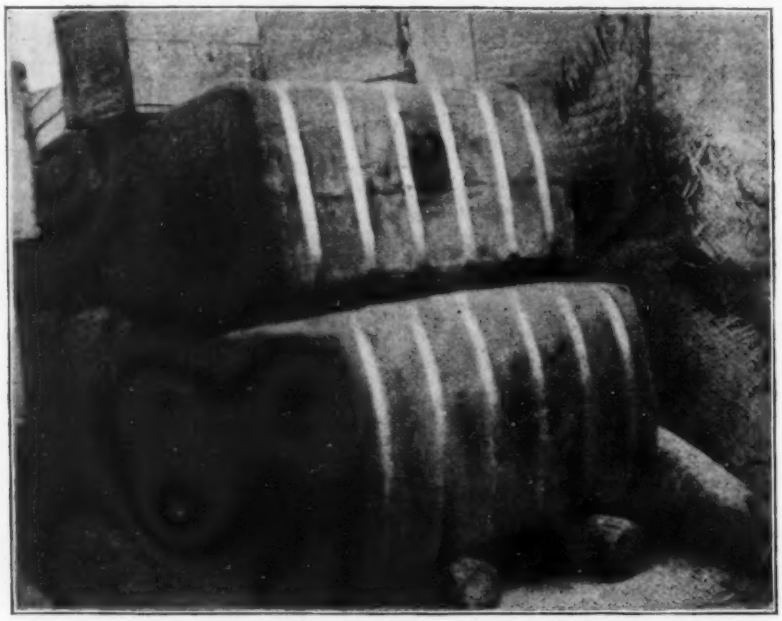


FIG. 3.

The claim that a much neater package is made by using bands is perfectly justified, and with some people this feature may be sufficient to turn the decision in their favor.

Having responded to each of the four claims made by the makers of the bands, there remains little more to be said. One of the greatest troubles with the band is that it cannot be depended upon to have a uniform

tensile strength, the result being that occasionally a band will burst in a weak place; but the makers answer this criticism by saying that this trouble occurred only when the bands were first put on the market, and it has now been entirely overcome. The bands in use vary from 25 gauge to 30, and from half an inch to an inch or an inch and a half in width, and up to this time the cost has prevented their being used on any but foreign shipments. The grade of rope used on domestic goods is very much cheaper than that used on goods for export, so that a considerable reduction will have to be made in the price of bands before they can be used to advantage on goods for the home market. Many Southern mills use the old bands from their cotton bales on shipments near home, but most Northern mills use a common grade of jute rope.

The fact that large buyers of goods are beginning to specify that these bands be used on bales consigned to them is another strong indication that iron bands and buckles have come to stay, so that as the process of manufacture becomes cheaper and the price of rope continues to go higher, a few years hence may find the roped bale a thing of the past. This is what surely will happen if the iron band makers continue their strenuous campaign, and are able to reduce the price still more. Six bands are generally used on a bale that would usually take nine ropes.

THE COST OF IRON BANDS COMPARED WITH ROPE.

Editor Textile World Record:

We are pleased that you noticed the Special Agent's report on bale ties for export goods, and read with interest the article by Mr. Dallas, which we beg to criticise only on one point, namely, the cost of using iron bands against rope.

There is one mistake that Mr. Dallas has made, and that is the cost compared to rope. The writer, who has interested most of the mills, who are using this band today, (and three-quarters of them are now using them for domestic bales), sold them against the jute rope, that was then selling at about six cents a pound. This was the cheapest rope on the market at that time. We succeeded in proving that our band and buckle was a shade cheaper than this rope, but when comparing our band in price with manila, or sisal, there was practically a saving of four to five, and even as high as six cents a pound, not counting the burlap saved, as a large overlap was necessary when rope was used. Since introducing our band, we have been able to reduce the cost, and we are now nearly a cent cheaper than when we first put it on the market. Our galvanized band, which has a smooth finish, same as sample that we are sending you, runs about the same number of feet to the pound as the heavy sisal rope used for export. The bales referred to in the government report are undoubtedly put up with this galvanized "Trojan," as we are the only manufacturers who have put these on the market so far. We took it upon ourselves to guarantee that there would be no claim made on goods shipped to China. The facts about the cost of this material can be easily found out from mills who have used it in large quantities.

Yours very truly,
De Haven Manufacturing Co.,
Hugh De Haven.

OUR ENGLISH CORRESPONDENT.

Editor Textile World Record:

Without any desire to bandy more words with Mr. Charles M. Heddle, I feel constrained to make an announcement. In justice to the Textile World Record, rather than to myself, be it said that your special correspondent in England is neither a manufacturer, nor a dependent of manufacturers, here or elsewhere. He is a perfectly independent journalist, who would be able to ply his own craft serenely if half the textile manufacturers in the country were in bankruptcy. Any suggestion that he is the hired advocate of certain interests is not only stupidly false to the fact, but very unflattering to the editor who prints his comments on British doings. Mr. Heddle is welcome to such construction of motives as he chooses to invent, but your correspondent trusts to continue to exercise his judgment without fear or favor, and to allow your readers to judge whether he is the creature of any interested faction. JAMES STRAND.

WOOL IN NEW SOUTH WALES.

BY ROBERT REGENT.

In the opinion of those who think for the trade in England, no duty is more imperative on manufacturers than that they should acquaint themselves fully with all grades of raw material. Partly because of that conviction and partly for other reasons, we came to have two small exhibitions of fibres. That in Manchester is not dissociated from the objects of the British Cotton-Growing Association and is intended as concrete proof that cotton can be grown in many comparatively unknown corners of the king's dominions.

The other—held first in London and then in Bradford—owes its origin to the government of New South Wales. That state is seeking immigrants and seeking to make its wools known better by one and the same means. The story of prosperity in New South Wales is coextensive with the rise of the wool trade and samples of wool, coupled with lantern-pictures on a screen, tell a great deal of what is important about that colony. If the samples tell little that is new to experienced men in the wool business, the exhibition helps materially to bring consumer into touch with producer and it lends a picturesque interest to trade.

Possibly the government would not be reluctant to extend its national advertising movement to America, for the concern of the pastoralist is with every wool-buying country. Textile societies, anxious to enhance the educational value of their meetings, might consider the utility of arranging for sample fleeces and lantern slides. In this way they would learn, by way of pictures, how a country, absolutely undiscovered until 135 years ago, is now the home of 40,000,000 sheep, chiefly merinos, bearing some seven pounds of wool each upon their backs. The crossbred sheep is being bred more largely, in response to the demand for larger carcasses for the export mutton trade. A beginning has been made with mohairs, but merinos, and especially the finest, are the typical products of New South Wales. The progress of such a source of supply is more than a local or a British matter. Inevitably, this State commands the attention of the wool-working world.

How flocks have been depleted by drought manufacturers have bitter reason to know. Until the key of the clouds is found, droughts must recur, but something is being done to mitigate their evil effects. Over large stretches of territory, water is to be found at a depth of 2,000 feet and the large stations are not complete now without their artesian wells throwing from one to four million gallons of water a day into water tanks and irrigation channels. Greatly as the flocks have grown in numbers, almost their sole food has been the growing grass. Silos are coming into general use, and it is probable that great loss of life will be prevented by the extended use of dry fodder. A little rain causes lucerne to spring up luxuriantly to a height at which a man's legs below the fork become invisible. As the result of a trial it has been found that one month's growth of lucerne kept 15,000 sheep for four months. The animals were fed exclusively on this dry food and thrived at a density of 75 sheep to the acre. The temptation is felt to make extravagant estimates on this basis of calculation.

It seems reasonably sure that the sheep-carrying capacity of the ranges is marked out for increase. The increase is not clear gain, for pasture is being converted into arable land which will grow crops unsuited for sheep. Under the new land legislation large runs are being bought by the State and let or sold to smaller squatters. Less wool of some famous marks will be forthcoming and it remains to be seen whether these deficiencies will be made more than good under the new regime.

While labor in Australia is reckoned dear by English standards, tillage appears to be cheap. The ploughing, which is the antecedent to sowing, is done on a large scale at 60c. per acre; contractors, finding their own implements and teams, both plough and sow for a charge varying between $1.25 and $1.80 per acre. Though wool from the back-blocks is occasionally as long as three weeks behind teams before reaching the railroads, the arrangements for its handling are generally good. Shearing is done by machine, as

well as hand. The classing and sorting is done in properly-equipped premises; the Sydney warehouses and shipping facilities are admirable. In all, the wool raising industry, as conducted in New South Wales, is a model which might profitably be copied in South Africa, Russia, England and perhaps America. One must admit, however, that high perfection is not to be expected from those that grow and pack wool on only a small scale.

A WHITE GOODS WEAVING MILL.

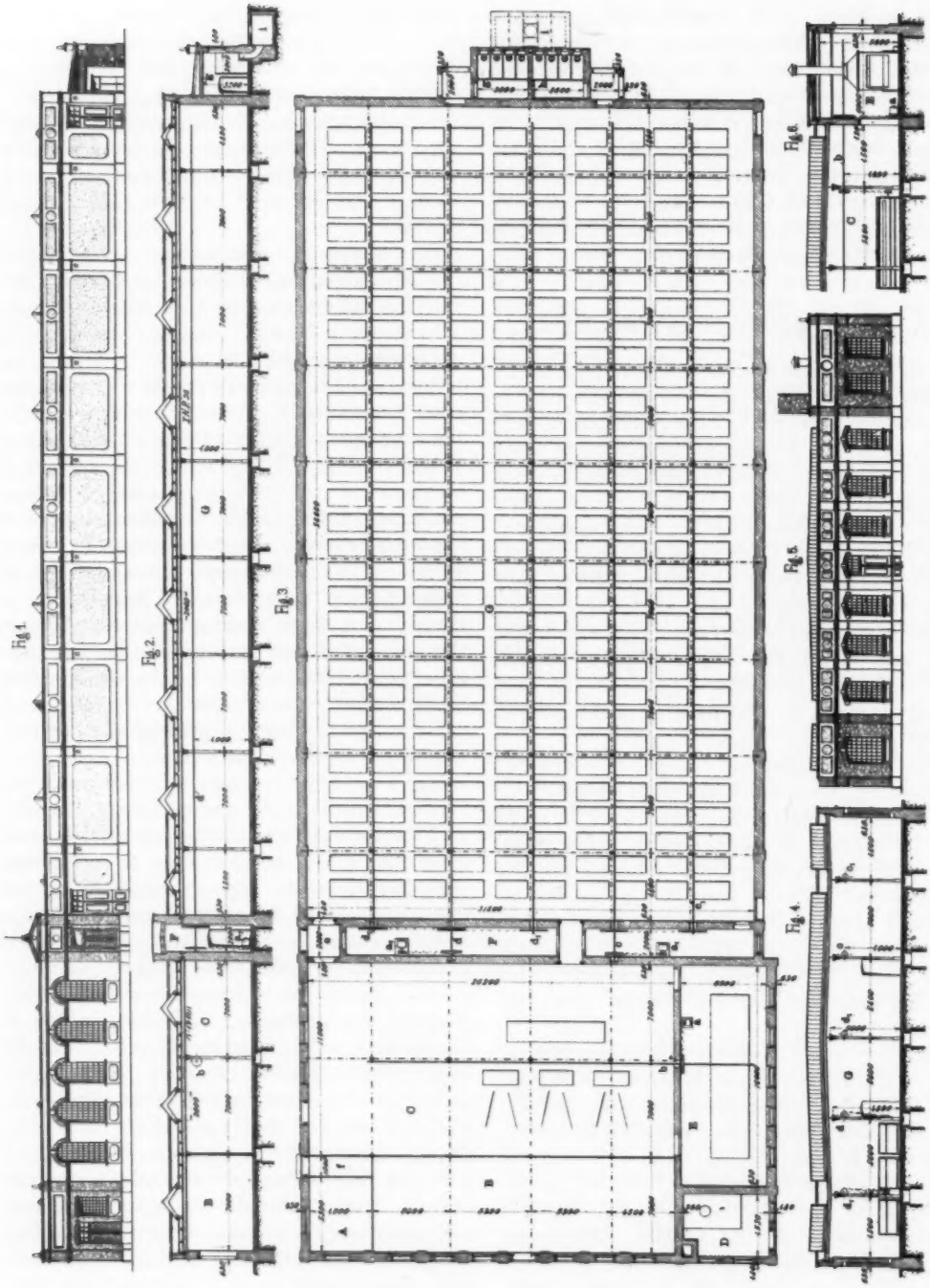
The accompanying plan of a mill for white goods shows that by the use of electricity as a motive power, the construction and power equipment can be greatly simplified in spite of the retention of belt transmission from a central motor. This mill has recently been built by Karl Kopola, in Turnova, Germany. The ground plan is rectangular with the exception of the slight projection of the part used for the preparatory machinery, which permits a better construction of the front. The mill is divided into two parts by the belt way, the connection between the two being obtained by two passage ways, shown in the plan.

The part at the left comprises the main entrance, f, from which access is obtained to the office, A, and to the store room, B, used for the storage of yarn, shipping, receiving and examination of goods. The warp yarn is delivered to the preparatory room, C, where it is warped and beamed on the machines shown in the illustration. The rest of the room, C, is used for warp twisting and drawing-in, as well as for storage of woven goods.

Partition walls separate the sizing room, E, and the boiler house, D, from the room, C. The sizing room accommodates the sizing machines, steam being supplied by a special boiler in the room, D, and which otherwise is used only for heating. Power is obtained from the electric current, supplied from a separate electric station. The cloth room, G, accommodates 320 power looms arranged in ten rows of 32 looms each. There are eight looms in each square between posts. With the exception of the two outside rows, the looms are suited for three yard wide goods. The outside looms are built to weave cloth two yards in width. Crossways the spaces between the posts are 14 1/2, 18 1/4, 18 3/4 (2), 18 1/4 and 14 1/2 feet; lengthways, 15 1/2, 22 3/4 (7), and 15 1/2 feet. This arrangement gives plenty of room to pass between the looms and a convenient arrangement of looms of different widths.

The closets are at h and g. The roof is of the monitor style, as shown at Fig. 2. The wooden rafters rest on iron beams and are covered with boards, which in turn are covered with a coating of wood cement. The windows are 6 1/2 feet in width. A separate row of windows is on each side of the room, the remaining windows being continuous, as shown at Fig. 4. Fig. 6 shows a section of the monitor roof, the preparatory division, C, being slightly different from the roof of the weave room. The sizing room, E, is covered with the ordinary wood cement roof, as shown at Fig. 6; it is lighted by windows at the side. A short ventilator passes through the roof, as shown at Fig. 6. The belt way is separated from the roof by walls rising to the height of 19 1/2 feet.

Generally electric power is applied to textile mills by the group system instead of using a separate motor for each machine. For weave rooms the group system is necessary, because with individual motors the belt from the motor to the loom is too short, while owing to the high speed of the motor the reduction of speed between the motor and the loom is too difficult. It has been found best to drive two or three lines of shafting by one motor and arrange the motors in a row; this plan has been adopted in the Kopola mill. The motor, a^2, drives by rope transmission the shaft, d. The shafts, d^1 and d^2, are driven by two other ropes. In a similar way the shafts, c and c^1, are driven by the motor, a^1. A separate motor, a, is used for the sizing room and drives the shaft, b, from which the sizing and preparatory machinery is driven. The motor, a, has a capacity of 4 h. p.; the motor, a^1, 30 h. p., and the motor, a^2, 50 h. p. The belt way can be used as a storage room for various utensils, warp beams, etc.—Uhland's Technische Rundschau.



PLAN FOR WHITE GOODS WEAVING MILL.

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

OUR TEXTILE SCHOOL.

LESSON XVIII.

BINDER WARPS.

The same are extensively used in connection with single cloth, double cloth as well as pile fabrics in the manufacture of men's and women's wear, as well as hangings and floor-coverings.

In connection with single cloth they are generally used for the purpose of imparting strength and stiffness to the fabric, referring in this instance more particularly for fabrics for women's wear, for example, silk dress goods, etc., whereas in connection with double cloth, they refer extensively to heavy weights for men's wear, and in connection with pile fabrics to upholstery goods, draperies and carpets.

BINDER WARPS AS USED IN CONNECTION WITH SINGLE CLOTH STRUCTURES.

The same, as mentioned previously, refers more particularly to fabrics for women's wear, i. e., dress goods, and in order to explain the subject more in detail to the reader, the accompanying plates of weaves and diagrams, Fig. 1 to Fig. 28, are given, referring more particularly to weaves and diagrams for silk dress goods, i. e., fabrics in which the face, or the face and back, of the cloth, is formed by means of a silk warp, or a silk warp and filling, the binder warp generally being of cotton, and resting between said silk structure, more particularly when considering the face of said fabrics only. It will be readily understood that in some instances a silk warp can be used in place of a cotton warp for the binder warp in order to be able to pronounce the goods as all silk fabrics.

For the face warp, as a rule, for these fabrics we have to select loosely interlacing weaves, and which, if used by themselves, would result in a fabric of insufficient stiffness to stand the demand of the trade, and it is for this reason that the binder warp is introduced, since we must have these loose weaves for the face of the fabric in order to give the latter the required high lustre and smoothness, a feature characteristic to loosely interlacing weaves, like for example, satin weaves, rib weaves, etc., etc., since the longer the float of the warp threads, the more chance for showing up the lustre of the yarn. It will be at the same time readily understood by the reader that these long floating warp threads naturally provide the means for completely hiding the tight interlacing binder warp threads, the latter actually resting in the body of the structure, leaning in some instances more or less towards its back.

Weave Fig. 1 shows us the $_1$—^{4} 5 leaf satin, warp effect, a weave extensively used in the manufacture of silk dress goods. The repeat of the weave is 5 x 5.

Weave Fig. 2 shows us this 5 leaf satin arranged with a binder warp, 2: 1, the repeat of the weave, i. e., the combination of the 5 leaf satin and the plain weave, 2: 1, is 30 x 10. We have shown the 5 leaf stain by means of ■ type, whereas the plain weave is shown by means of ⊠ type.

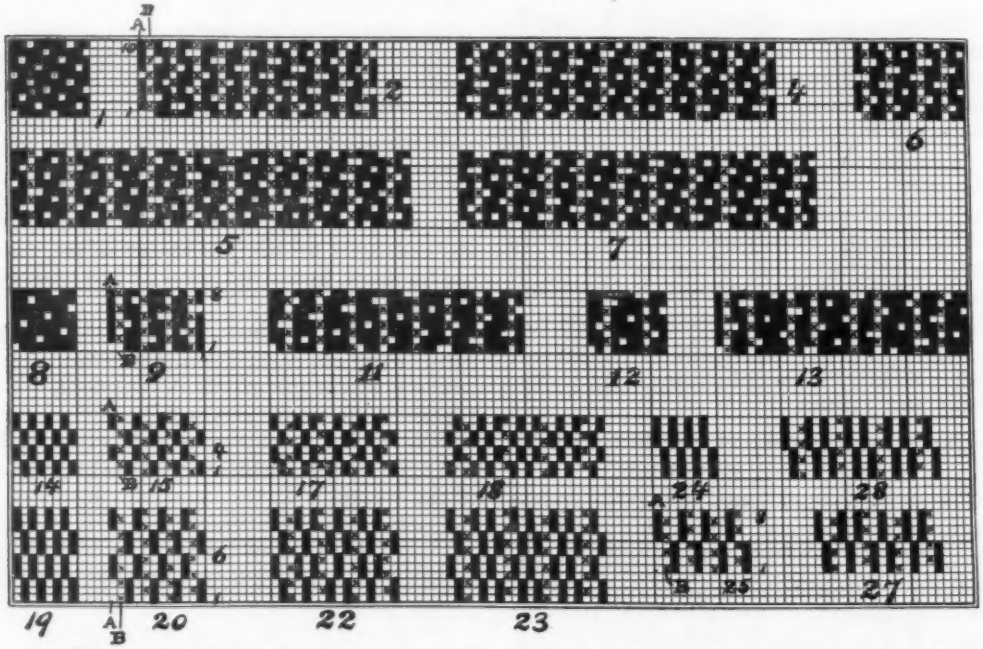
Diagram Fig. 3 is given more particularly to show the interlacing of one end of the satin warp and one end of the binder warp, letters of reference A and B respectively in this diagram being selected to correspond to the same letters of reference in weave Fig. 2, i. e., the warp thread A in diagram Fig. 3 shows the interlacing of the first warp thread in weave Fig. 2 with its respective picks, warp thread B in diagram Fig. 3 showing the interlacing of the second warp thread in weave Fig. 2 with its picks, two repeats of the weave Fig. 2 being given in diagram Fig. 3, indicated respectively by twice calling the numerals 1 to 10. Closely examining the interlacing of warp threads A and B in diagram Fig. 3 will show us the difference of the interlacing of these two threads, warp

thread A interlacing twice in one repeat of weave Fig. 2, i. e., 10 picks, whereas warp thread B interlaces 5 times in the same number of picks, consequently warp thread B will take up considerable more during weaving compared to warp thread A, and for which reason the satin warp and the binder warp, each, must be run off its own warp beam, in order to furnish sufficient warp from the binder beam warp to accommodate the satin warp, i. e., more length of binder warp will be required compared to satin warp in a given length of woven fabric.

This difference with reference to take-up of satin warp as well as binder warp, at the same time also refers to examples of weaves, Figs. 4, 5, 6 and 7, and for which reason, explanation given will at the same time refer to this item in connection with weaves quoted.

Weave Fig. 4 shows us the 5 leaf satin arranged with a binder warp (plain weave) arranged 3: 1, the repeat of the complete combination weave being 40 x 10. The only difference between weaves Figs. 4 and 2 is, that in the former more satin warp is used compared to a given number of binder warps; which to use depending on the character of and use for the fabric in practical wear.

Weave Fig. 5 shows us the same 5 leaf satin used in connection with a plain binder warp, the combination between both being, 4 satin: 1 binder, the satin warp in this instance again more predominating than the binder warp in amount of ends used between each other as compared to weave Fig. 4, previously given. The repeat of weave Fig. 5 is 50 x 10.



Until now we have always used a regular number of satin warp threads in proportion to each binder, a feature which is not always the case, since for one reason or the other we may have to change this proportion, weaves Figs. 6 and 7 showing two such examples, viz.:

Weave Fig. 6 shows the combination of the 5 leaf satin with the plain binder warp and arranged 2: 1: 3: 1, the same being a medium between the arrangement used in weaves Fig. 2 and Fig. 4; repeating on 7 x 10, and may be used, when, for example, weave Fig. 2 would produce too stiff a fabric, whereas weave Fig. 4 would be the opposite, hence weave Fig. 6 the medium between, i. e., the proper combination of satin threads and binder threads to use.

Weave Fig. 7 shows us the combination of this 5 leaf satin and the plain binder, arranged 3:1:4:1, i. e., being a combination of satin and plain between the combinations given in connection with weaves Figs. 4 and 5. The repeat of weave Fig. 7 is 45 x 10.

Weave Fig. 8 shows us the 8 leaf satin, a weave very extensively used in connection with silk dress goods, a weave considerably looser compared to weave Fig. 1, and consequently calling more frequently for binder warps than the other. The repeat of the weave is 8 x 8.

Weave Fig. 9 shows us this 8 leaf satin arranged with a plain binder warp in the proportion of 2:1, i. e., 2 ends satin to alternate with 1 end binder warp. Repeat 12 x 8.

Fig. 3

Diagram Fig. 10 shows us the interlacing of one satin thread and one binder thread. In order to clearly show to the reader the difference in the interlacing in these two different systems of threads, indicating to him that each set of warp threads must come from its own beam; i. e., a different warp beam must be used for the satin warp and a different warp beam must be used for the binder warp, since the latter will take up considerably more than the former, the satin warp interlacing once in 8 picks, whereas the binder warp interlaces 4 times in said 8 picks. Warp thread A in diagram Fig. 10 refers to number 1 warp thread in weave Fig. 9, i. e., to the warp thread shown in ■ type and indicated respectively by means of letter of reference A on top of weave. Warp thread B in diagram Fig. 10 shows us the first binder warp, ⊠ in weave Fig. 9, i. e., the second warp thread of the complete weave, and the one indicated by letter of reference B.

Weave Fig. 11 shows us the combination of 3 ends 8 leaf satin warp to alternate with 1 end binder warp, i. e., the combination of 3:1, being a combination resulting in a somewhat looser structure compared to the previously quoted weave, provided the same number of ends were used; weave Fig. 11 repeating on 32 x 8.

Fig. 10

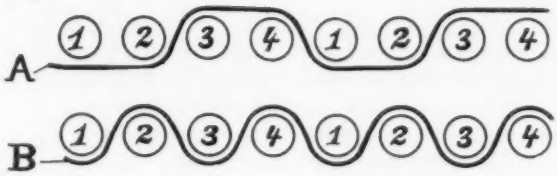


Fig. 16

Weave Fig. 12 shows us the combination of the 8 leaf satin warp with a plain binder warp, arranged 4:1, repeating on 10 x 8, and being again a looser interlacing combination weave compared to weave Fig. 11.

Weave Fig. 13 shows us the combination of 2:1:4:1, using the 8 leaf satin for face, in connection with the plain weave for binder, the complete weave repeating on 32 x 8.

Weave Fig. 14 shows us the $^{2}\!-\!_{2}$, 2 x 4, warp rib weave, a weave more or less used in connection with silk dress goods. These warp rib weaves are always more or less loosely interlacing weaves, and when consequently a binder warp is necessary to give the fabric the required stiffness. Another feature in favor of using binder warps with these rib weaves is the fact that the rib warp forms the face and back of the fabric, and in this instance the binder warp must rest in the body of the structure, not being visible either on the face or the back, and when consequently a cotton binder warp will be completely hidden between the rib warp, on both sides of the fabric, hence no objection to a cotton binder warp in connection with these fabrics, with reference to general appearance of the fabric on both the face and back.

Weave Fig. 15 shows us this 2 x 4 warp rib weave arranged 2: 1 for a binder warp; the plain weave, as will be readily understood, referring to the interlacing of the binder warp, ■ type indicating the rib, or face and back warp, and ⊠ type indicating the binder warp in this weave, which repeats on 6 x 4.

Diagram Fig. 16 shows us 2 sections of the fabric, the warp thread indicated by means of letter of reference A showing one of the rib warp threads, whereas letter of reference B indicates the section of the binder warp, as interlaces in connection with the former, a feature readily seen by means of numerals of reference for the picks being selected to correspond in both diagrams, viz.: 1 to 4. Letter of reference A in diagram Fig. 16 refers to the interlacing of the first warp thread in weave Fig. 15, i. e., to the thread indicated by means of letter of reference A on top of the weave, whereas warp thread B in diagram Fig. 16 refers to the warp thread indicated by means of letter B in weave Fig. 15.

Weave Fig. 17 shows the combination of the warp rib given in weave Fig. 14, in connection with a plain binder warp arranged 3: 1, the complete combination weave repeating on 8 x 4, and being a somewhat looser fabric structure than the one given in connection with weave Fig. 15.

Diagram Fig. 18 shows us the same warp rib weave as used in connection with weaves Figs. 15 and 17, as well as the same binder warp, the arrangement between both being in this instance 4: 1, the complete weave repeating on 10 x 4.

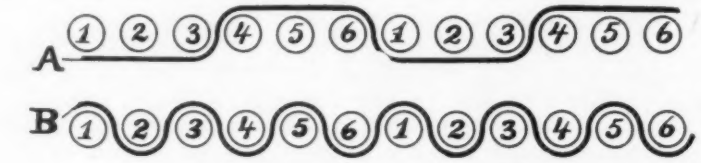


Fig 21

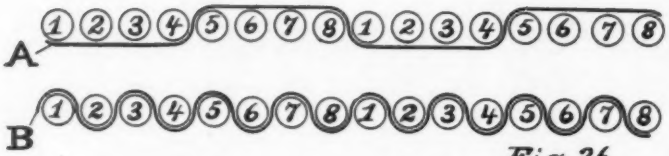


Fig. 26

Weave Fig. 19 shows the $^{3}\!-\!_{3}$ 2 x 6 warp rib weave, a weave very extensively used in connection with silk, etc., dress goods, in connection with a binder warp.

Weave Fig. 20 shows us this weave arranged 2: 1 with a plain binder warp, the weave repeating on 6 x 6.

Diagram Fig. 21 is again the diagram respectively of a rib warp thread and a binder warp thread, showing clearly the difference in interlacing between both, i. e., the necessity of 2 beams in the loom. Numerals of reference in the filling in both diagrams A and B are selected to correspond the same as before, at the same time letters of reference A and B in diagram Fig. 21 and weave

Fig. 20 are selected to correspond, in order to simplify matters to the student.

Weave Fig. 22 shows us the same warp rib weave as given in weave Fig. 19, arranged with a plain binder warp in proportion to 3: 1, the weave repeating on 8 x 6, and being a somewhat looser fabric structure than weave Fig. 20.

Weave Fig. 23 shows this 2 x 4 warp rib weave arranged 4: 1 with a plain binder warp, the combination weave repeating on 10 x 6, and in turn is a looser fabric structure compared to weave Fig. 22.

Weave Fig. 24 shows us the $^{4}/_{4}$ 2 x 8 warp rib weave, being in turn again a considerable looser weave compared to weave Fig. 19, if referring to the same texture, and consequently will more frequently call for a

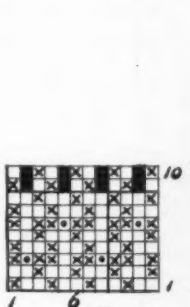


Fig. 29

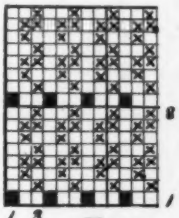


Fig. 30

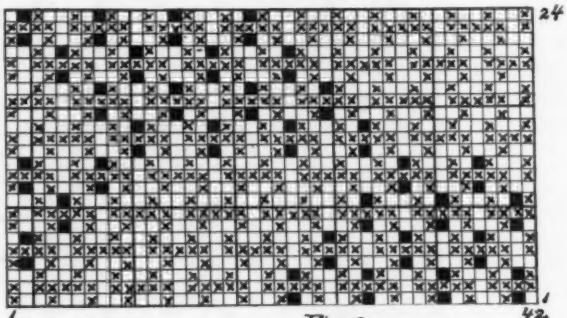


Fig. 31

binder warp in order to give the fabric structure for which it is used stiffness, weaves Figs. 25, 27 and 28 being for this purpose designed in order to explain the subject.

Weave Fig. 25 shows the combination of 2 ends rib warp to alternate with 1 end binder warp, repeat of weave being 6 x 8.

Diagram Fig. 26 shows under A the interlacing rib warp threads for 2 repeats of the weave, B showing the corresponding interlacing of the binder warp, both compared to each other indicating the necessity of 2-beam work for these fabrics. Letters and numerals of reference in diagram Fig. 26 correspond to letters and numerals of reference quoted in connection with weave Fig. 25, hence both will explain themselves and towards each other.

Weave Fig. 27 shows us the combination of 2 x 8 warp rib weave, 3: 1, arranged with a binder warp, the repeat of the weave being 8 x 8, and is a somewhat looser fabric structure compared to the one given in connection with weave Fig. 25. Weave Fig. 28 shows us the previously quoted warp rib weave, arranged 4: 1 with a binder warp, and from explanation thus far given will explain itself at once to the reader.

Binder warp is also extensively used in connection with white figured cotton dress goods, both for plain as well as fancy effects, and for which reason weaves Figs. 29, 30, 31 and 32 are given.

Fig. 29 shows us a weave used extensively in connection with plain rib pique fabrics, the face warp in this weave we have shown by means of ⊠ type, whereas the binder warp has been shown by means of ■ type, the ⊡ type indicating the place where said binder warp forms the back structure with a special back filling, the ■ type indicating the place where it forms an impression running across the entire width of the fabric, i. e., produces the characteristic rib lines to these fabrics. The face weave of this structure is the plain weave. The binder warp will not be prominently visible on the face of the structure, its only purpose being, as previously referred to, to produce the rib lines to the fabric. The repeat of the weave is 6 x 10.

Weave Fig. 30 shows us another similar fabric structure for dress goods, in this instance bringing the binder warp prominently on the face of the structure in order to form the rib lines across the width of the fabric, said binder warp, see ■ type, when not interlacing on pick 1 on the structure, floating on the back of the fabric, not interlacing with a back pick, the latter, if consid-

ering picks 4 and 7, being in this instance what we may term "wadding" picks compared to picks 3 and 6 in weave Fig. 29, and where said picks then interlace with the binder warp and form a back structure to the cloth. The repeat of weave Fig. 30 is 3 x 8.

Weave Fig. 31 shows us a fancy stitching of binder warp in order to produce figured effects on the face of the cloth, said binder warp, when not stitching on the face structure, being used with a back filling for forming the back structure. It will be readily understood, that the stitching of the binder warp, as shown in ■ type, produces or forms impressions in the face fabric, according to the figure employed for the motive of stitching. Repeat of weave is 42 x 24.

The term binder warp as used in connection with weaves Figs. 29, 30 and 31, is frequently also referred to as the back warp, it being a back warp, which by means of binding visible on the face structure, produces figures upon the latter, hence this characteristic name "binder warp" well adapted for it.

Weave Fig. 32 refers to a binder warp used in connection with cotton fabrics, as employed for ornamental purposes, like, for example, doilies, quilts, etc., it shows the analysis of such a fabric, i. e., the way warp and filling interlaces in order to produce the fabric. As will be readily understood, it is only a portion of a design, however, being sufficient to explain the application of a binder warp for such fabrics. The arrangement of the warp in this diagram of a weave, or portion of a weave, as we may call it, is 2 ends figure warp to alternate with 1 end

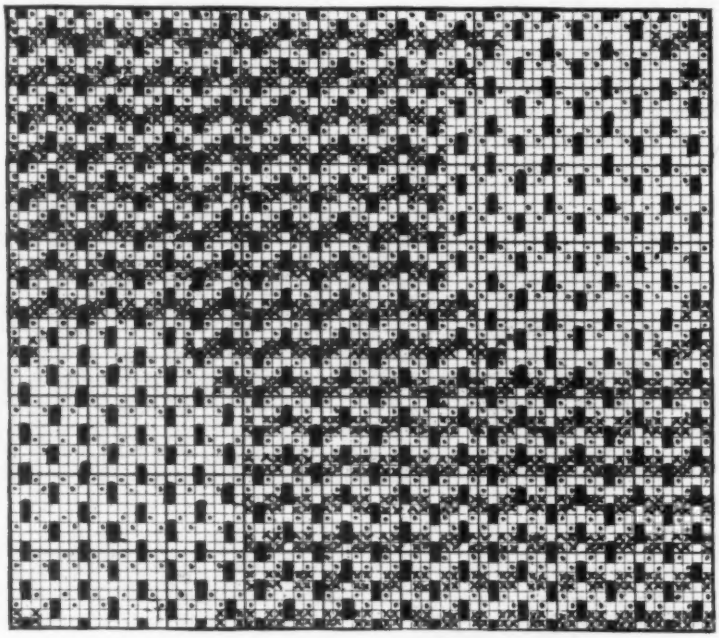


Fig. 32

binder warp. The figure warp is shown by means of ⊠ type, and ⊡ type respectively, using ■ type for the binder warp on account of the latter being the important subject for this lesson. The arrangement of the filling is 2 picks fine to alternate with 2 picks coarse. The figure warp should in this instance be of a higher count than the binder warp, using for example, 20's cotton for said figure warp in connection with 36's cotton for the binder warp. With reference to the filling, picks 1 and 2 in portion of weave Fig. 32, having quoted counts of yarn for the warp before, will call for 2 fine picks, about

60's cotton for ground, whereas picks 3 and 4 call for 2 coarse picks, say about 8's cotton for figure (spot on face) of the fabric. A good texture to use in connection with counts of yarn quoted is a reed 30 x 3 (split the 2 figure threads by means of a dent) with 140 picks per inch.

The fabric thus described can be woven on a jacquard loom or on a dobby loom. In either instance the loom should be specially mounted for weaving these fabrics. The figure warp is operated in either case independent from the binder warp, the latter being drawn on 2 or 4 special harness calling for the $^{2}\!-\!_{2}$ 2 x 4 common rib weave for its interlacing all over the fabric; thus the interlacing for the figure warp is stamped on the jacquard cards, or on the chain built for the dobby direct from the motive, and not from the analysis of the fabric structure, as shown in connection with Fig. 32.

Two figure warp threads are used for one line on the design, they being operated in unison from the jacquard machine or dobby for determining size and shape of figure according to the design on the 2 coarse picks, but are raised $^{1}\!-\!_{1}$ or $_{1}\!-\!^{1}$ respectively, on the 2 fine picks by means of 2 compound harness weaving on those 2 picks common plain weave. Thus it will be seen that the actual intricate work in the construction of these fabrics is done by means of the special construction and mounting of the loom, the designing in itself being of the most simple nature.

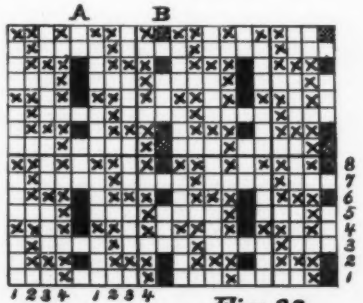


Fig. 33

We will now quote a few examples with reference to heavy weights for men's wear, and where the binder warp is used for the special purpose of combining two special fabric structures into one. Such a case frequently happens when dealing with double faced fabrics where one structure is of a totally different color than the other, for example, large checks for fancy backs, and where the use of the back warp for interlacing with the face structure would have a tendency to show the colors through on the

Fig. 34

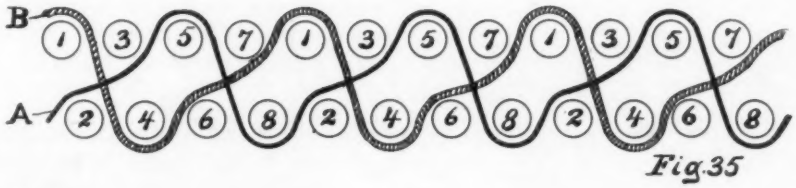


Fig. 35

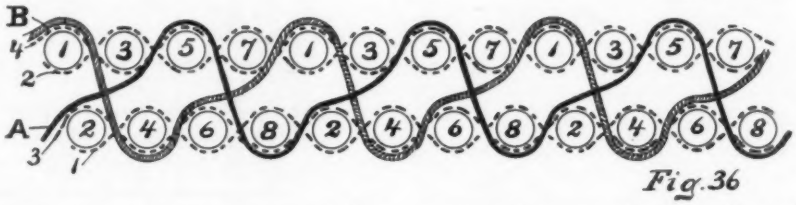


Fig. 36

face. Although they will always show more or less through on account of the fibres protruding from the threads, yet by using an extra cotton binder warp for interlacing these two structures into one fabric, a great step towards reducing the evil previously re-

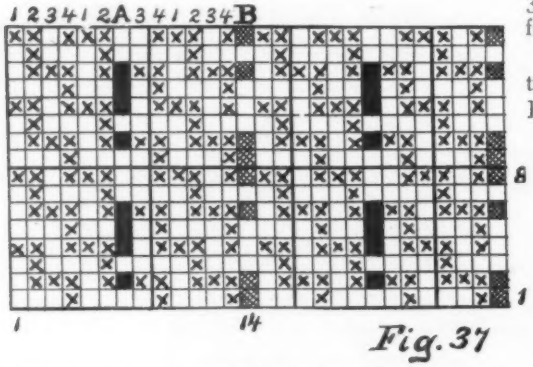


Fig. 37

ferred to is accomplished, the binder warp being a fine cotton warp greatly remedying the trouble.

In order to explain the subject, the accompanying weaves and diagrams, Figs. 33 to 44, are given, which by means of a careful study cannot help but explain the affair.

Weave Fig. 33 repeating on 10 warp threads x 8 picks shows us 2 fabric structures which interlace on the plain weave—see ⊠ type, i. e., warp threads indicated 1, 2,

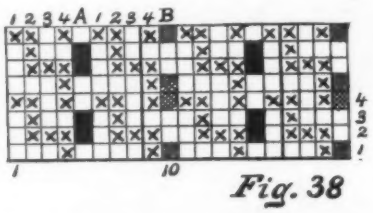


Fig. 38

3 and 4 below weave—combined into one structure by means of a binder warp, see A and B. We selected ■ type for warp thread indicated by letter of reference A, and ▨ type for warp thread indicated by means of letter of reference B, in order to simplify matters for the student when later on studying diagrams Figs. 35 and 36, and where we selected a corresponding indication for these 2 binder threads, showing one (A) in full lines, and the other (B) in a shaded affair.

Diagram Fig. 34 shows us the double plain fabric structure, numerals of reference 1, 2, 3 and 4, with reference to warp threads being selected to correspond to the same numbers in weave Fig. 33, and in the same manner numerals of reference 1, 2, 3, 4, 5, 6, 7 and 8 with reference to the filling in both, weaves Figs. 33 and diagram of fabric Fig. 34, being identical in order to simplify study for the student.

Having considered the double plain structure, as shown in connection with diagram Fig. 34, we next show in diagram Fig. 35

Fig. 39

Fig. 40

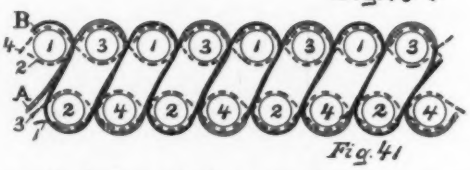


Fig. 41

the interlacing of these structures into one fabric by means of binder warp A and B respectively, the latter two letters of reference quoted referring to the same letters of reference given on top of weave Fig.

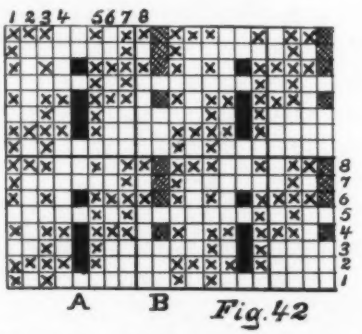


Fig. 42

33. Numerals of reference (picks) in diagram Fig. 35 are identical with numerals of reference given in connection diagram Fig. 34, hence clearly will explain the interlacing of the 2 plain fabrics into one structure by means of a binder warp.

Diagram Fig. 36 is a combination of diagrams Figs. 34 and 35, i. e., shows the interlacing of the double plain (face and back) and the combining of both structures into one by means of the binder warp. Letters of reference and numerals of reference in diagram Fig. 36 are selected to correspond with those used in connection with diagrams Figs. 34 and 35, hence will readily explain the complete fabric structure, as shown in diagram Fig. 36. It will be readily understood that it is impossible for us to show warp threads resting in the fabric structure side by side in a diagram, and for which reason we had to show said threads, where two come side by side in the fabric, in the diagram resting above each other, a feature readily grasped by the student.

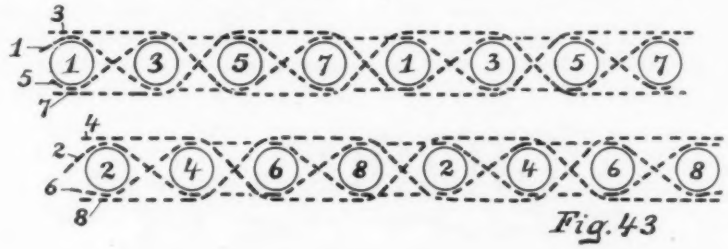


Fig. 43

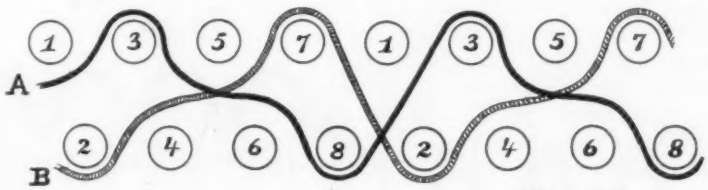


Fig. 44

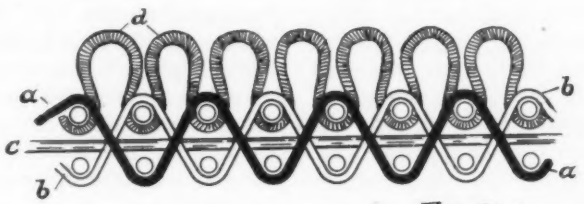


Fig. 45

Weave Fig. 37 shows a similar weave, repeating on 14 x 8, showing the combination of 2 plain fabric structures interlaced together by means of a binder warp, the proportion, however, in this instance being 6 double plain threads: 1 binder warp thread, whereas in the previous example, the combination was 4:1; however, since other points are identical (letters of reference and numerals being selected to correspond) no special explanation to this weave is required, in other words, it will explain itself to the student from explanation given before.

Weave Fig. 38 shows 2 plain structures interlaced somewhat tighter, more oftener, than given in connection with weave Fig. 33, twice as many interlacings for the binder warp being employed, using again the same kind of type and the same numerals and letters of reference as used before, this weave will readily explain itself to the student. Its repeat is 10 x 4, the double plain warps being shown by means of ⊠ type and indicated respectively 1, 2, 3 and 4, and the binder warp in one instance by ■ type, in the other instance by means of ▨ type, in order to correspond to the diagram of section of the fabric given later on.

Diagram Fig. 39 shows again the double plain weave, diagram Fig. 40 shows the in-

terlacing of the two structures by means of a binder warp, diagram Fig. 41 shows the combination of diagrams Figs. 39 and 40, i. e., a complete section of the fabric showing also its interlacing of the two structures composing it, into one. Letters and numerals of reference in this illustration are corresponding to those used in connection with diagrams Figs. 39 and 40, and consequently will explain itself.

In previous given example we used the plain weave for both fabric structures, since however other weaves are used in the same way, weave Fig. 42 and diagrams Figs. 43 and 44 are given, showing in this instance the $^{2}—_{2}$ 4 harness twill used for both structures—see warp threads 1, 2, 3, 4, 5, 6, 7 and 8 as shown by means of ⊠ type in weave Fig. 42 for this purpose. Warp threads A and B indicate the binder warp threads, the same being the letters of reference used for these 2 threads in connection with diagram Fig. 44, and consequently will help to simplify matters to the reader. The repeat of weave Fig. 42 is 10 x 8.

Diagram Fig. 43 shows the interlacing of the 2 structures composing the fabric by means of the $^{2}—_{2}$ 4 harness twill. Numerals of reference accompanying this diagram with reference to warp threads 1, 2, 3, 4, 5, 6, 7 and 8 are identical with those used in connection with weave Fig. 42, the same being the case with reference to picks 1, 2, 3, 4, 5, 6, 7 and 8 used respectively in diagram Fig. 43 and weave Fig. 42.

Diagram Fig. 44 shows the interlacing of the 2 fabric structure according to weave Fig. 42, warp threads A and B in both illustrations corresponding, i. e., referring to the same warp thread, viz.: A warp thread shown in full black type both in diagram and weave, and warp thread B shown in shaded type both in diagram and weave, hence will explain the interlacing of the two structures at once to the reader.

Diagram Fig. 45 is a section of a tapestry carpet showing the application of the binder warp to these fabrics. Letters of reference a and b indicate the binder warp, which in this instance, interlaces on the $^{2}—_{2}$ 4 harness basket weave. c is what is known as the stuffer warp and d the loops as formed by

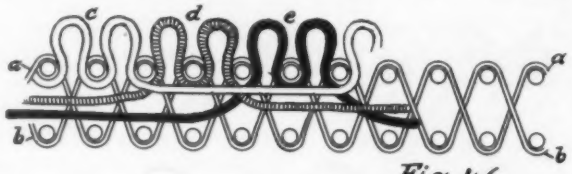


Fig. 46

Fig. 47

means of the pile warp of these fabrics. It will be readily seen in this instance that the binder warp, a b, is not visible on the face of the fabric, however it shows on the back of the structure, being no detriment in this instance, since the latter rests on the floor, i. e., not visible to the eye when the carpet is on the floor.

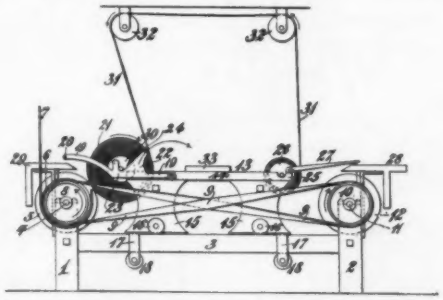
Diagram Fig. 46 shows the use of the binder warp in connection with Brussels carpets. Letters of reference a and b again indicate the binder warp, c, d and e indicate the loops of a 3 frame Brussels carpet, the binder warp interlacing on the same weave as quoted in connection with diagram Fig. 45, and is not visible on the face of the fabric, resting below the loops on the back of the structure.

Diagram Fig. 47 shows a pile fabric in which a binder warp is used, the same being indicated by means of letter of reference a, letters of reference b and c indicate the pile

warp or figure warp, as the case may be, and which by exchanging positions on face and back of the fabric produces the figures to the structure, the binder warp holding the 2 figure warps by means of binder picks in place in the fabric.

THE PERCHING OF WOOLENS AND WORSTEDS.

The chief requirements for this operation are a good light, a good northeast light in connection with large clean windows, and a perch over which the fabrics are examined. The commonly met with apparatus for this work consists of two rolls, usually attached to wooden hangers, fastened to the ceiling, or they may be put on posts in the room; in



either case in such a manner as to bring the fabrics, when pulled over the perch, squarely in front of the window.

Lately A. L. Robertshaw of Philadelphia patented a perching machine, providing in the same means for mechanically moving the fabric under operation in either direction over the perch, whereby the operator is able to give full attention to the inspection of the cloth. On account of the novelty of the machine a description of it may interest the readers of this journal. The accompanying illustration shows this new machine in its side elevation, numerals of references accompanying it indicate thus: 1 and 2, the uprights of the frame of the machine, and which are connected together by means of side pieces, 3, the latter forming at the same time tracks. Journaled in the upright, 1, is a shaft, 4, upon which is suitably mounted the front roller, 5, and also a pulley, 6, which receives its motion from a belt, 7. Shaft, 4, has also mounted on it a pulley, 8, carrying a belt, 9, which, as seen from the illustration, also passes around a second pulley, 10, mounted upon the shaft, 11, and suitably journaled in the upright, 2, of the machine, said shaft, 11, having also mounted thereon the rear driving roller, 12. It will be readily seen that on account of the crossed belt, the rollers, 5 and 12, rotate in opposite directions.

A carriage, 13, which consists of the bars, 14, and supports, 15, has situated at the bottom of it, and suitably mounted thereon, wheels, 16, being adapted to travel on the upper sides of the rails, 3, while extending from support, 15, are arms, 17, carrying wheels, 18, which are in contact with the lower side of the rail, 3, the object of this being to keep the carriage from upsetting and always keep the same in proper position.

19 indicates a lever, there being two in the machine, one on each side, and which are pivotally attached to the carriage, and connected with a bar, 20, the latter serving as a bar for the tender of the machine to readily operate the levers, 19, from any position in front of the machine. A lug, 21, and a nose, 22, both of which extend from each of the levers, 19, form brackets, 23, the upper edge of said nose, 22, forming a track, its purpose being described later.

At the rear part of the machine, and hinged thereto, is another bracket, 25, holding the rear cloth roll, 26, and which can extend from brackets, 25, to a table, 28.

A similar table, 29, is also situated above the driving roll, 5.

The cloth, 31, in its travel from roll, 26, to roll, 30, passes over what we may term, an ordinary perch, the same being indicated by the rolls, 32.

The operation of the machine is as follows: The roll, 26, which carries the cloth, 31, to be perched, is placed upon the table, 28, in direct line with levers, 27, and when a slight impulse will cause the roll to run down the levers, 27, into the brackets, 25, where it is held.

The cloth, 31, is then guided by hand over the rolls, 32, and then down in front of the carriage, 13, the latter having been drawn close to the front driving roller, 5. The

cloth is then being laid over the table, 29, and an empty roller, 30, placed thereon, its shaft being seated in the socket or bracket, 23, of the levers, 19. Said roll, 30, in turn is then brought into substantial contact with the front driving roller, 5. Motion is now imparted to the machine, and when the front or empty roll as in contact with the front roll, 5, causes the same to rotate, in turn winding the cloth as coming from roller, 26, upon roller, 30, the cloth meanwhile being carefully inspected.

If, however, for one reason or other the movement of the cloth must be stopped, the same is accomplished by simply moving the carriage, 13, a slight distance away from the roll, 5, in turn stopping the running of the cloth.

If again it is desired to reverse the run of the cloth, the carriage is then simply pushed back so as to bring the roll, 26, in contact with the rear driving roll, 12, thus reversing the direction of the run of the cloth, in turn winding it from roll, 30, back upon the roll, 26.

After the cloth has been wound off of the rear roll, the front roll can be quickly removed by raising levers, 19, in the direction indicated by arrow and when in turn the shafts of the rolls will travel along the track, 24, of nose, 22, and the roll of cloth received on table, 33, where it can be easily removed by pushing the same over to the levers, 27, and when then the machine is ready for the insertion of a new roll of cloth for inspection, and when the operation thus described is then simply repeated.

A NEW DYEING PROCESS.

The same is a late German invention and relates to a method of and apparatus for laying on and spreading over the raised pile or nap of fabrics dyes or mordants in such a manner that the pile is dyed, mordanted, in one or more colors or mordants different from the ground of the fabric, while the ground itself takes little or no dye, the object being to provide glittering color effects, besides imparting to the fabric a full and plush-like appearance.

The improvement chiefly consists in the feature that by means of a napping machine the dye or mordant is spread over the pile of the fabric, the laying or applying of the dye or mordant being either produced by said means or by separate devices before the spreading operation.

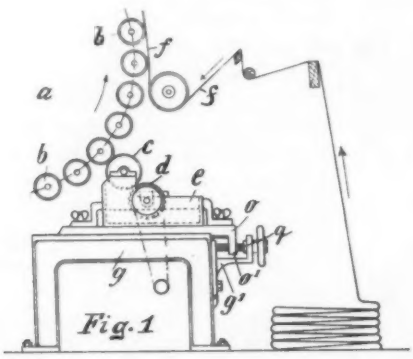


Fig. 1

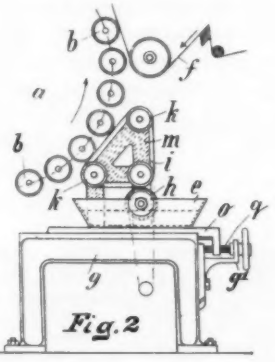


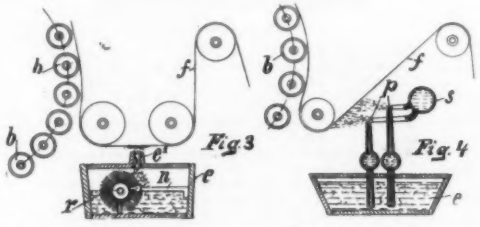
Fig. 2

In order that the new process may be more clearly understood, reference is had to the accompanying illustrations, in which Fig. 1 shows an apparatus for transferring the dye or mordant to the napping rolls of a wet napping machine by means of the dye spreading rollers, while Fig. 2 represents the same furnished with an endless felt web instead of the dye-spreading rollers. Figs. 3 and 4 illustrate apparatus for transferring the dye or mordant direct onto the pile of the fabric on its way to the napper.

In the arrangement shown in Fig. 1 the napping rollers, b, suitably arranged around the circumference of the drum, a, of a napper, receive from dye rollers, c and d, the dye supplied from the trough, e, which when the

drum is rotated is transferred to the fabric, f. The fabric or material is led in the usual way past the rollers, b. The tub containing the dye liquor is placed on a frame, g, and is so adjusted to the napping rollers, b, as to be capable of transferring more or less color, as may be required, to the said rollers. This adjustment is effected by an adjusting-screw, q, arranged in, a, bracket, g', of the stand, g, and engaging the female thread of a depending lap, o', of the base plate, o, to which the trough, e, is clamped.

In the construction shown in Fig. 2 for applying the dye to the napping rolls, b, the dye liquor is first transferred from the trough e, by means of the cylinder, h, to the endless felt apron, i, which in turn applies the color to the napping rollers, b. The said apron runs over guide-rollers, k, which are connected with the trough, e, by a frame, m, so that upon the adjustment of the trough, e,



on the stand, g, by an adjusting-screw, n, as set forth with reference to Fig. 1, the felt, i, is enabled to apply more or less color to the napping rollers.

In Fig. 3 the trough, e, contains a rotatable brush, r, near which a striker, n, is so arranged that the bristles of the rotating brush strike against the same, and consequently sprinkle or spray dye or mordant through the nozzle, e', of the trough against the pile of the fabric, f, which in turn is led to the napping rollers, b, which spread the color or mordant over the pile.

Instead of sprinkling or spraying the dye or mordant onto the pile of the fabric by means of a rotating brush, r, an atomizer, p, (see Fig. 4), may be employed, which transfers the dye or mordant under the action of steam or compressed air supplied through the main, s, onto the pile of the fabric, f, in which it is then spread by the napping rollers, b, as before described.

Instead of using one sprinkler or one atomizer only, several may be used simultaneously in either case.

AN ENGLISH ATTACHMENT FOR WOOL SPINNING MACHINES.

This is a new device with reference to wool and worsted spinning machinery, having, according to its inventor, for its object to assist in producing a finer and sounder thread by means of increasing the number of alternate stretchings given to the roving at each revolution of the twisting head, in this way drawing the roving finer and more uniform, at the same time omitting the danger of breaking on account of uneven and violent drawing. Another feature is the means of thus increasing the twist near to the twisting head, resulting in a softer roving in comparison between the twist head and delivery rolls, in this way enabling still further drawing, and increasing twist to be put into the yarn, resulting in turn in a sound and fine thread.

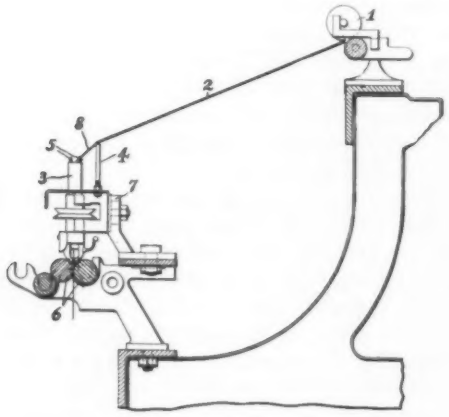
In connection with the new device, the roving, as coming from the delivery rolls of the machine, in turn enters the axis of a twisting head at an angle, the top of this head being provided with two approximately opposite pins, so that as the roving travels forward, it is given two alternate stretchings and releasings by one revolution of the head, imparting in turn a continuous stretching and releasing action to the roving, thereby eliminating the disadvantages of relatively widely separated stretchings and releasings.

A still further improvement consists in a support or deflector adjustably mounted, the object of which is to give an excess of, or harder twist, to the yarn between the twisting head and the deflector and a decrease of, or softer twist, between the deflector and the delivery rollers, allowing thereby the speed of the twisting head to be increased. The effect of the alternate stretchings and releasings is therefore increased between the deflector and delivery rollers, allowing thereby the speed of the twisting head to be increased. The effect of the alternate stretchings and releasings is therefore in-

creased between the deflector and delivery rollers.

With reference to the accompanying illustration, the same shows the head of the new device in side elevation and partly in section, as well as the portion of the spinning machine to which the device more particularly refers.

In the illustration, 1 indicates the delivery rolls, between which the roving, 2, passes in its passage to the twisting head, 3, said roving before reaching the twisting head, passing over a deflector or support, 4. The twisting head, 3, is provided on its top with two pins, 5, set opposite from each other, their object being to give to the roving a continuous stretching and releasing motion, which the inventor, D. O. Pease of Manchester,

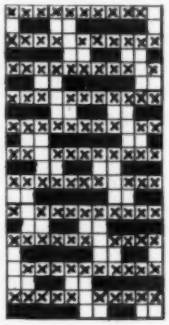


claims will result in a finer and at the same time more uniform thread than is the case where the stretch and release take place at less frequent intervals or say only once in one revolution of the twister head.

The yarn after leaving the twist head, 3, passes to the delivery rollers, 6. The deflector, 4, is fixed on the frame, 7, the yarn bearing on the same causing the twisting action of the twist head, 3, to be stronger on the part, 8, of the yarn, than the part of the yarn at 2, thus causing the stretching action of the pins, 5, to be less on part, 8, between the jaws of the head, and the deflector, and greater on the part, 2, between the delivery rolls and the deflector.

NOVELTIES FROM FOREIGN SOURCES.

Piece Dye Worsted Coating.



Complete Weave. Repeat 11×22.

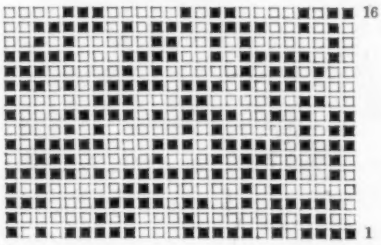
Warp—5280 ends, 2/48's worsted, gray, 11 or 22 harness straight draw.

Reed—20×4=66 inches wide in loom.

Filling—120 picks per inch, single 18's worsted gray.

Finish—Clear face finish, nap back, 56 inches wide.

Worsted Melton Suiting.



Complete Weave. Repeat 24 × 16.

Warp—6048 ends, 24 harness straight draw, all 2/48's worsted yarn.

Reed—14×6=72 inches wide.

Dress—

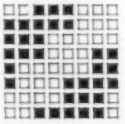
2 ends, black and white twist,
2 ends, blue,
18 ends, black and medium gray twist,
2 ends, black and white twist.

24 ends repeat of dressing.

Filling—95 picks per inch, all 2/48's worsted, black.

Finish—Worsted melton finish; scour well, full and clip on shear; 56 inches finished width.

Worsted Suiting.



Complete Weave.

Repeat 8×8.

Warp—5575 ends, 16 harness straight draw.

Reed—21½×4=64¾ inches wide in loom.

Dress—

2 ends, 2/56's worsted black and white twisted over with single 56's worsted, black ..... = 2 ends
4 ends. 2/40's worsted, black..... = 4 ends
4 ends, 2/40's worsted, black and gray..... = 4 ends
6 ends, 2/40 worsted, black..... = 6 ends

Repeat of pattern: 16 ends

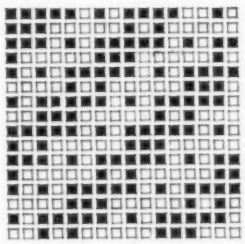
Filling—85 picks per inch, arranged thus:

2 picks, 2/56's worsted, black and white, twisted over with single 56's worsted, black..... = 2 picks
4 picks, 5 run woolen yarn, black..... = 4 picks
4 picks, 2/40's worsted, black and gray..... = 4 picks
6 picks, 5 run woolen yarn, black..... = 6 picks

Repeat of pattern: 16 picks

Finish:—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave.

Repeat 16×16.

Warp—7565 ends, 16 harness straight draw.

Reed—14½×8=65 inches wide in loom.

Dress—

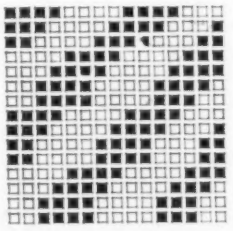
1 end, 2/52's worsted, black, twisted over with silk white..... = 1 end
1 end, 2/52's worsted, black and white, twisted over with single 52's worsted, black,..... = 1 end
6 ends, 2/52's worsted, dark gray..... = 6 ends
1 end, 2/52's worsted, black, twisted over with silk white..... = 1 end
1 end, 2/52's worsted, black and white, twisted over with single 52's worsted, black..... = 1 end
2 ends, 2/52's worsted, black and gray.....
2 ends, 2/52's worsted, dark gray..... } × 16 = 64 ends
2 ends, 2/52's worsted, dark gray.....
2 ends, 2/52's worsted, black and gray } × 2=8
2 ends, 2/52's worsted, black and gray } × 2=8 } × 8=128 ends
2 ends, 2/52's worsted, dark gray.....
2 ends, 2/52's worsted, black and gray } × 13 ..... = 52 ends
2 ends, 2/52's worsted, dark gray.....
2 ends, 2/52's worsted, black and gray..... = 2 ends

256 ends

Filling—Same arrangement, colors and counts of yarn as used in warp.

Finish—Worsted finish, 56 inches wide.

Worsted Diagonal Suiting.



Complete Weave.

Repeat 15 × 15.

Warp—4610 ends.

Reed—18×4=64 inches wide in loom.

Dress—

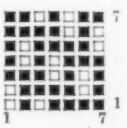
2 ends, 2/64's worsted, black, twisted over with white silk,
2 ends, 2/24's worsted, black,
2 ends, 2/64's worsted, black and blue twist,
2 ends, 2/24's worsted, black,
2 ends, 2/64's worsted, black and gray twist,
5 ends, 2/24's worsted, black.
2 ends, 2/64's worsted, black, twisted over with white silk,
2 ends, 2/24's worsted, black,
2 ends, 2/64's worsted, redbrown,
2 ends, 2/24's worsted, black,
2 ends, 2/64's worsted, black and gray twist,
5 ends, 2/24's worsted, black.

30 ends, Repeat of pattern.

Filling:—70 picks, per inch, same arrangement, color and counts of yarn as used in warp.

Finish—Worsted finish, 56 inches wide.

Worsted Melton.



Complete Weave 7×7.

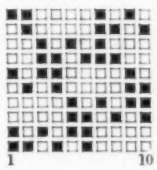
Warp—7200 ends 2/48's worsted, 14 or 21 harness straight draw.

Reed—25×4=72 inches wide in loom.

Filling—100 picks per inch, single 20's worsted.

Finish—Full 15 per cent. Melton finish, 56 inches finished width.

Worsted Serge.



Complete Weave. Repeat 10×10.

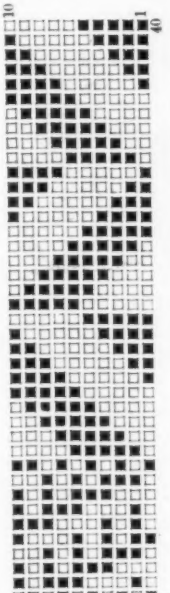
Warp—2100 ends, 2/12's worsted, 10 harness straight draw.

Reed—15×2=70 inches wide in loom.

Filling—30 picks per inch, same yarn as for warp.

Finish—Half rough finish, 56 inches finished width.

Fancy Worsted Trousering.



Complete Weave.

Repeat 40×10.

Warp—6520 ends, 20 harness fancy draw.

Reed—25×4=65 inches wide in loom.

Dress—

10 ends, 2/36's worsted, dark blue,
10 ends, 2/36's worsted, dark brown.

20 ends in repeat of pattern.

Filling—90 picks per inch, 2/36's worsted black.

Finish—Worsted finish, 56 inches finished width.

A NOVEL TENSION DEVICE FOR WARP BEAMS.

The object of this device is to provide an improved tension for warp beam or warp carrying spools, having a long range of movement, with a view to take up comparatively little room, allowing at the same time direct application of the device on the warp beam or warp carrying spool without the use of interposed gear wheels.

In order to illustrate the application of the new device to a warp beam, the accompanying illustrations are given, and of which Fig. 1 is a longitudinal sectional elevation of the new device as applied to a warp beam, Fig. 2 being a sectional elevation of Fig. 1, taken

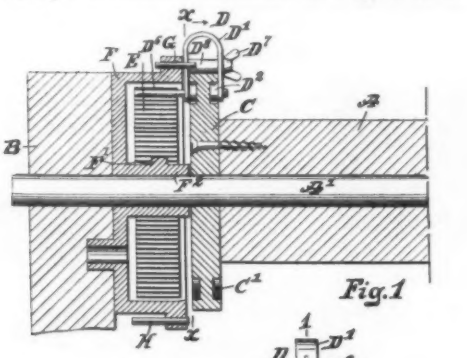


Fig. 1

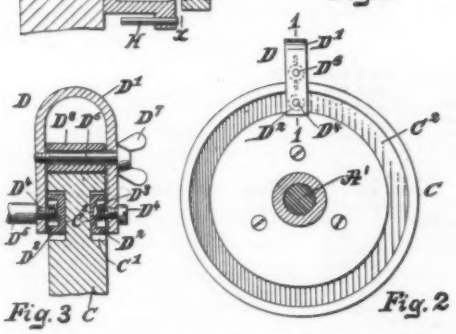


Fig. 3 Fig. 2

on the line (x—x). Fig. 3 is an enlarged cross section, as compared to Figs. 1 and 2, of the new tension device, taken on the line (1—1) Fig. 2.

In the illustrations, A indicates the warp beam, which has its shaft, A′, journaled in suitable bearings on a loom frame, B. On one end of the warp beam, A, is secured a wheel, C, engaged by a bifurcated friction device, D, which is pressed on by one end of a spring, E, contained in a spring casing, F, secured to the loom frame, B, and adjacent to the wheel, C, as plainly indicated in Fig. 1. The friction device, D, is curved at D′, the two members thereof carrying friction disks, D^2, extending in annular grooves, C′, formed on the faces of the wheel, C, the inner surfaces of said friction disks, D^2, pressing against the surfaces, C^2, of the web at the grooved portions, as shown in Figs. 1 and 3. The disks, D^2, which are cup shaped are pressed on by springs, D^3, held on screw rods, D^4, screwing in the free ends of the said members of the bifurcated device, one of the said screw rods, D^4, having an extension, D^5, projecting into the spring casing, F, and engaging the outer end of the helical spring, E, secured at its inner end to a hook, F′, arranged on the hub, F^2, of the casing, F. D^6 is a bolt having a wing nut, D^7, adapted to be screwed up or unscrewed in order to press the members of the device more or less together, in turn causing the disks, D^2, to bear with more or less friction against the surfaces, C^2, of the web of the wheel, C. A friction roller, D^8, is journaled on the clamping bolt, D^6, and bears on the peripheral face of the wheel, C.

The spring casing, F, is fitted with a stop pin, G, which extends into the path of the friction device, D, limiting the bodily movement of the same with the wheel, C, after the desired tension has been given to the warp beam, A, and the warp thereon, thus rotating the warp beam, A, under tension of the device, D, and its spring, E, while at the same time, D is held against further movement, although giving the required tension to the wheel, C, and warp beam, A, by the friction disks, D^2.

It will be readily understood that the spring, E, can be put under any amount of tension required, according to the nature of the warp on the warp beam, so that the desired amount of tension is given to the warp while the loom is in operation.

This device is brought in the market by the Keller Machine Company of New York, and can be also used in connection with warp carrying spools, the operation being the same as described in connection with the reference to the warp beam.

Since November, 1903, the loss of wages in Lancashire caused by short time is estimated at $17,500,000.

THE CURTIS & MARBLE NAPPER.

The general construction of this napping machine is designed more particularly for handling endless felts as are used in connection with paper-making machinery, i. e., endless fabrics of considerable dimension, heavy, and consequently inconvenient to handle. Points of advantage of this napper over other makes are, that two napping contacts can be obtained without the substitution or movement of intermediate contact-rolls, affording also ready facility for the convenient introduction and removal of the endless fabrics to and from the machine.

These features are attained by means of providing a sliding arrangement on the machine for the carriage holding the draft roll, and thus readily permitting the machine to be changed from a single contact to a two contact napper if so desired. The devices for feeding the fabric to the first napping contact, as well as the one for the guide roll, as situated on the front of the machine between this first napping contact and the draft roll, are both of a most ingenious construction; the latter one more particularly since its range permits the proper application of the one or two contacts (as the case may be) to the fabric under operation to a nicety.

In order to be able to explain to the reader the construction and operation of this napper, the accompanying two illustrations are given and of which

Fig. 1 is an end elevation of the machine clearly showing the three important devices to the machine, viz.:

A, the feeding device of the fabric to the machine, i. e., to its first contact, X^1, with the napping cylinder.

B, the carriage for the draft-roll, which when in its forward position refers to a single contact, X^1, whereas its retracted position (see dotted lines in illustration) changes the machine to a two contact, X^1 and X^2, napper.

C, the device for carrying the guide roll, as regulating in connection with the feeding device the amount of napping at the first, X^1, contact, as well as in connection with the position of the draft roll the amount of napping at the second, X^2, contact when such is used.

Fig. 2 is a detail illustration, showing the automatic take up device necessary for the drive of the draft roll (previously referred to) to accommodate the different positions of the latter in the machine.

The feeding device. The same is referred to in connection with Fig. 1 by means of letter of reference A, and chiefly consists in a movable guide or bottom contact roll, 1, positioned below the napping cylinder, 2, of the machine. The device for the change of position of this contact roll, 1, according to amount of napping contact desired for the fabric, consists in brackets, 3, supporting three guide rolls, 4, as well as a carriage, 5 (carrying the contact roll, 1), to which a change of position is readily imparted by sprocket chain, 6, through sprocket gear, 7, by means of connecting to the latter any suitable device for readily turning said sprocket gear one way or the other and when once properly adjusted in turn keep it in this position and consequently (through chain, 6, and carriage, 5), also the contact roll, 1.

The run of the fabric. The endless fabric structure for which this napper is more especially designed (a portion of which, 8, only being shown in the illustration, the other portion being supported by a suitable frame provided with guide rolls and situated in front of the napper proper) after passing half ways round contact roll, 1, in turn comes, at X^1, in contact with the clothing, 9, of the napping cylinder, 2, passing in turn partially around guide roll, 10, and draft roll, 11, and from there over guide rolls in the frame previously referred to (not shown in illustration) back to the napper, entering the latter for another napping process around contact roll, 1, as previously referred to.

The clothing, 9, of the napping cylinder, 2, consists generally of teazels, arranged on rotating spindles, although, if so desired, wire clothing in place of the teazels may be employed. 12 is a clearing brush provided for keeping the teazels or wire clothing, if such is used, in proper working (clean) condition.

The movable draft-roll, 11, forms the means for either using the napper as a single, X^1, or a two, X^1 and X^2, contact machine. This draft roller is supported on either side of the machine in bearings, 13, secured to carriage, 14, one of said bearings being

secured stationary, the other hinged so that it can be swung outward to permit the endless felt or fabric as to be napped or having been napped to be slipped respectively either onto or off the draft-roll, the latter for the purpose being placed outside the line of the napping cylinder, i. e., in a position where it is possible for the operator to handle these

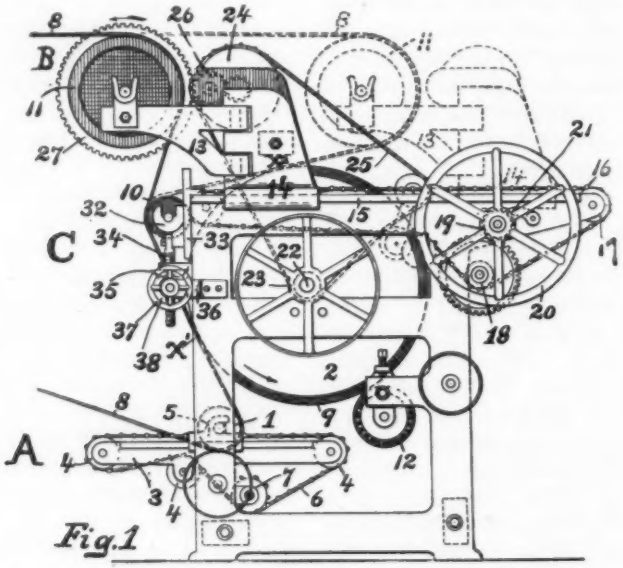


Fig. 1

usually large and unwieldy fabrics as treated by this machine conveniently.

The carriage, 14, consisting of two upright end stands, one on each side of the machine, and suitably connected together by means of a tie beam, is arranged to move backward and forward on guide ways, 15, the former being for this purpose provided with suitably formed feet for seating and sliding upon said guide ways, 15.

The moving of the carriage forwards and backwards as well as retaining in position in the machine is done by means of chains, 16, attached at their ends to the carriage slides and each arranged around guide sheaves, 17, and a sprocket wheel, 18, mounted on a cross shaft connected by gearing, 19, with short shaft provided with a hand wheel, 20, for effecting its rotation. A notched rim and pawl, at 21, serves for retaining the parts in fixed relation when at any adjusted position. It will be readily seen that by turning the hand wheel, 20, the shaft and the sprockets, 18, are rotated, causing a draft on the chains, 16, and the resultant shifting of the carriage, 14, and the draft roll, 11, from forward to rearward position, or vice versa. The draft roll, 11, is driven from the main cylinder shaft, 22, by means of sprocket wheels, 23 and 24, and a chain, 25, either direct or by interposed spur-gearing at 26, for reducing proportional speed, the gears being mounted on suitable axis studs fixed on the carriage, 14, the gears meshing in train and with a gear, 27, fixed on the end of the draft-roll axle.

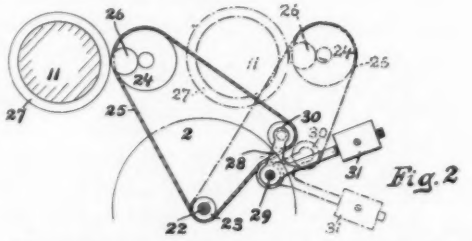


Fig. 2

The take-up mechanism as required for driving the draft roll in its different positions is best explained in connection with diagram, Fig. 2, the same comprising an angle lever, 28, fulcrumed on a stationary axis pivot, 29, and having one arm provided with a roll, 30, that runs against the inner face of the chain, 25, and its other arm provided with a counterweight, 31, for keeping the chain, 25, taut

and by swing of the lever, 28, to accommodate any variation that may occur by reason of the shifting of the relative position of the draft-roll carriage and upper sprocket wheel, 24.

The device, C, for carrying the guide or directing roll, 10, for regulating the amount of contact of the fabric under operation with the napping cylinder is another ingeniously constructed contrivance. Said guide or directing roll, 10, is mounted in bearings, 32, that are arranged to slide up and down on dovetailed guideways, 33, attached to the upper front edges of the main frames of the napper. Said bearings, 32, are each provided with a screw threaded supporting rod, 34, that passes through a rotatable nut, 35, mounted in bracket, 36, fixed on the frame. A short shaft furnished with a hand wheel, 37, is also mounted in the bracket and operatively connected with the nut by bevel gears, 38, for effecting upward and downward adjustment of the roll bearing by rotation of the hand wheel, 37, as desired.

HARNESS MOTION FOR DRAPER LOOMS.

This new motion refers to their "plain" or what is also known as 2-harness looms, having for its purpose to impart a smooth and positive acting motion to the harness frames, effecting the raising and lowering of the latter without the customary straps, bands or other flexible connections. The new motion is located in the loom above the harness frames and external to the loom side, thus leaving an unobstructed space beneath the harness frames, in turn making the placing of new warps in the loom more convenient for the fixer.

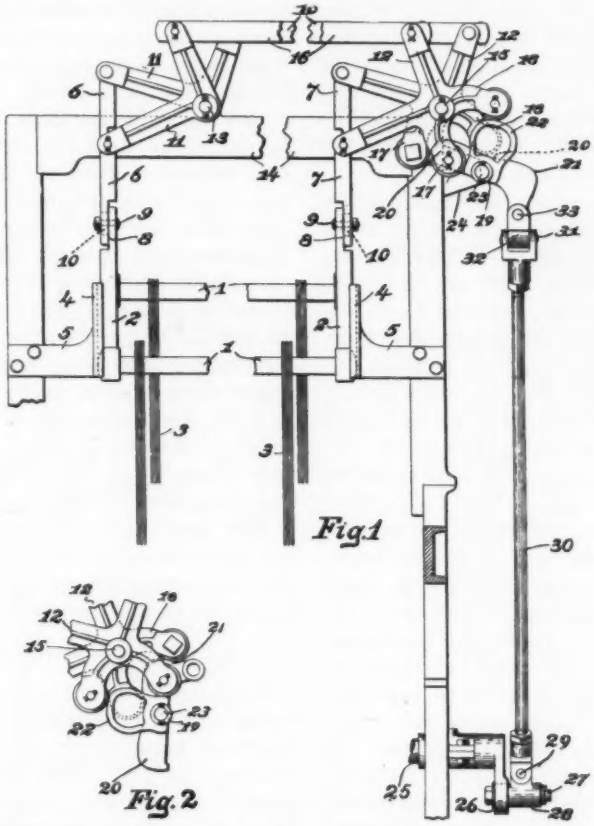


Fig. 1

Fig. 2

The accompanying illustration, Fig. 1, clearly shows the new motion as applied to a loom, sufficient portions of the latter being given to clearly explain the construction and operation of the new shedding device. Fig. 2 is a detail illustration showing the shedding motion in the extreme other position from the one given in Fig. 1.

Numerals of references in the illustration (see Fig. 1) indicates thus: 1 the cross bar and 2 the side bars of the two harness frames as carrying respectively the heddles, 3, the side bars, 2, sliding vertically in guides, 4, as form a part of each bracket, 5, as in turn adjusted to the loom frame. The guides, 4, are provided for keeping the harness frames in their proper position during the shedding of the loom. The front harness frame is shown depressed and the rear harness frame raised.

Side bars, 2, of each harness frame in turn are adjustably connected to links, 6 and 7, respectively, by means of corrugated portions, 8, provided to both parts where they meet, said corrugated portions being clamped together by means of bolts, 9, passing through slots, 10, in the links.

By means of these slots, the links can be readily adjusted to produce a perfect shed, corrugated faces holding the adjacent parts firmly together after the bolts are tightened up. Links, 6 and 7, are connected by means of a pair of bent levers, 11 and 12, the same being respectively mounted on a fixed fulcrum, 13, on the loom arch, 14, while levers, 12, which transmit motion to levers 11 and in turn the harnesses, are fulcrumed at 15.

Levers 11 and 12 are connected together by means of a link, 16, in order that both ends of the harness are raised in unison. Each lever, 12, is provided with two arms, 17 and 18, having rolls provided at their ends. These rolls bear against an actuator, which consists of a hub, 19, having two cams, 20 and 21, extending in opposite directions from each other, and also a third cam, 22, projecting at right angles from the other two cams, and latterly offset therefrom. 23 indicates a fulcrum stud, which is fastened to a support, 24, secured to the side arch, 14, the stud, 23, being parallel with the fulcrum, 13 and 15, and at the same time the cams of the actuator are so situated that the cam, 22, is in contact with the rolls of the front transmitter, while the cams, 20 and 21, are in proper contact with the rolls of the rear transmitter.

The actuator is oscillated by means of a crank shaft, 25, which extends through the loom side, and has fast to its end a crank, 26, provided with a wrist pin, 27, on which is loosely mounted a sleeve, 28, being pivotally connected at 29, to the lower end of a link, 30.

To the top end of link 30 is pivoted at 31 a coupling link, 32, and which in turn is pivoted at 33 to an extension of the cam, 21, of the actuator.

The operation of the motion is as follows: As seen in the illustration, Fig. 1, the front harness is in its lowest and the rear harness in its highest position. Now it will be readily seen that when the link, 30, is raised the same turns the actuator in a left hand direction, and consequently the transmitting arm, 12, and its rolls, which operate and are in connection with the front harness, are moved by means of the cam, 22, pressing against said rollers, in turn moving the transmitter arm, 12, in a right hand direction and consequently raises the harness. At the same time, however, that the front harness is operated, the rear harness is also put in operation, this being accomplished by the cams, 20 and 21, which have the rollers of the rear transmitter in contact with them, the transmitter by means of said cams being turned in a left hand direction, in turn lowering the rear harness, and in which case the front and rear transmitters and their respective cams assuming the positions as shown in Fig. 2.

The opposite cycle of movements will be the case when the link, 30, is pulled down, the cams, transmitters, harness, etc., then being in the position as shown in Fig. 1.

Competition from the United States in our home market cannot be said to be very extensive at present. Some cases, however, are reported of the importation of American yarns; calicoes and substitutes for calicoes are also imported spasmodically when American home trade is bad. It is said that the importation of ducks and drills below British cost has taken place, and sales of surplus cotton prints and a low class of printed muslin have occurred. Many goods have been bought by one witness at dumping prices, and dumping is alleged in regard to boot and shoe linings, cotton bags, braces, and other smallwares.—British Tariff Commission.

CORRESPONDENCE AND NOTES

Upon Textile Topics at Home and Abroad.

THE MANUFACTURE OF FANCY YARN.

BY JAMES AND CHARLES DANTZER.

(Continued from January.)

When the knots are to be placed on the yarn at irregular intervals an irregular cam

FIG. 60.

similar to that shown at Fig. 60 is used. In many cases it is necessary to stop alternately the rollers, b and c, Fig. 55. In this case each set of rolls must be driven independently. The gear, A, keyed to the driving shaft, M, is connected by a chain of gears with B and D, on the rollers to be driven,

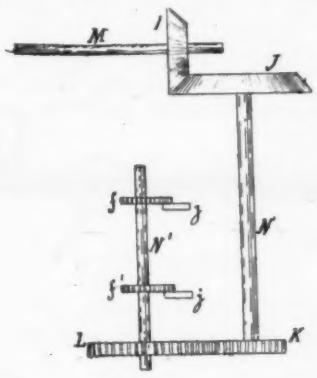
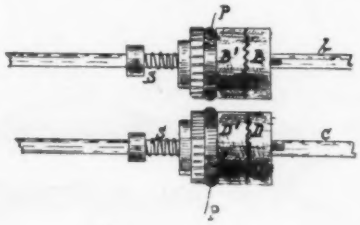


FIG. 62.

Fig. 61. The gears, B and D, are mounted on a sleeve. The vertical shaft, N', driven by the gears, I, J, K, and L, carry two plates, f and f', Fig. 62, to which are attached the cams, j and j'. These cams can be removed as desired. The forks, P, are held against the cams at one end and are connected with the sleeves, B and D, Fig. 63, at the other. The cams vibrate the forks and thus alternately connect and disconnect the clutches by which the rollers are driven. In this way the rollers are stopped and started to form the knot on the yarn as already explained. By this arrangement each set of rollers can be controlled independently and each thread made to serve alternately for the base and the knot respectively.

The size of the knots and the distance separating them can be varied by changing the

FIG. 61.



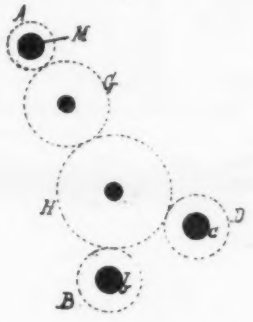


FIG. 63.

cams, j and j', on the gear, K. When a tie thread is used it is twisted with the first two threads by the second operation and in a reverse direction. Fig. 64 shows a knotted yarn in which the knot is formed alternately by threads 1 and 2. At Fig. 65 the threads 1-2 and 3-4, form knots alternately. At Fig. 56 threads 2 and 3 are used under the same conditions. The base, 1, is a coarse thread. At Fig. 67 knots are formed alternately by threads 2 and 3, on the base thread, 1. The same style of knotted yarn is shown at Fig.

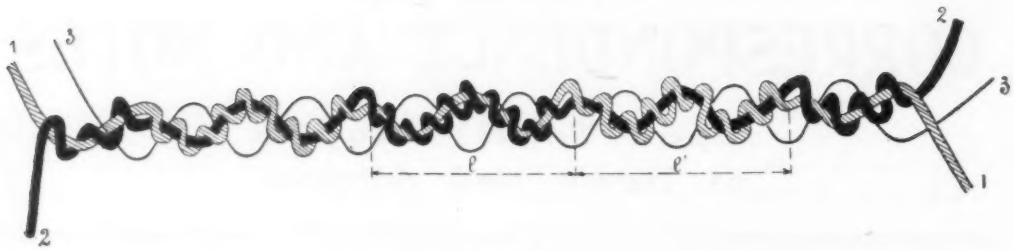


FIG. 64.

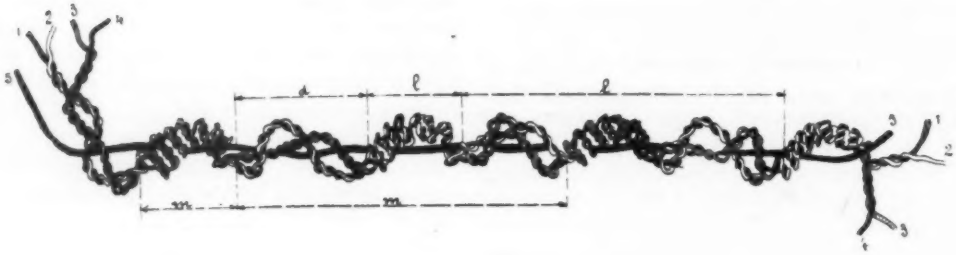


FIG. 65.

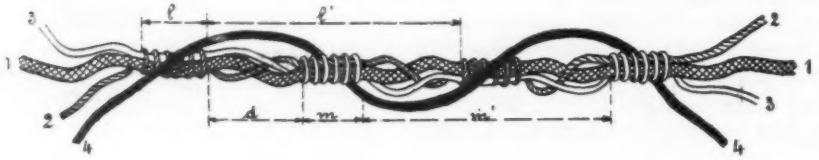


FIG. 66.

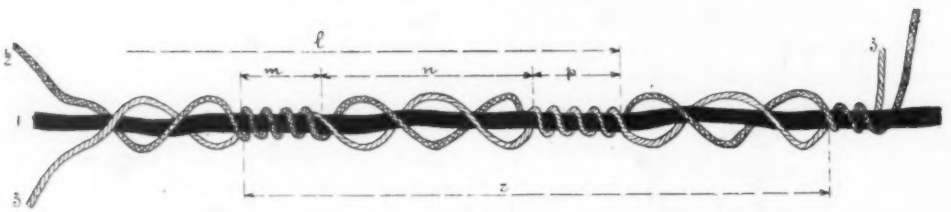


FIG. 67.

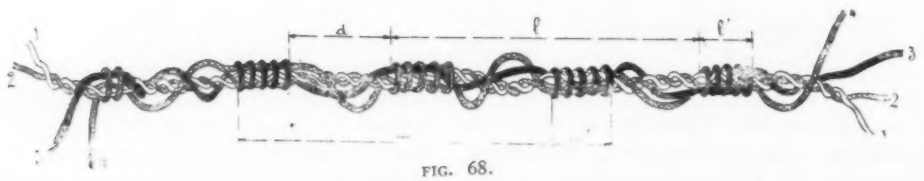


FIG. 68.

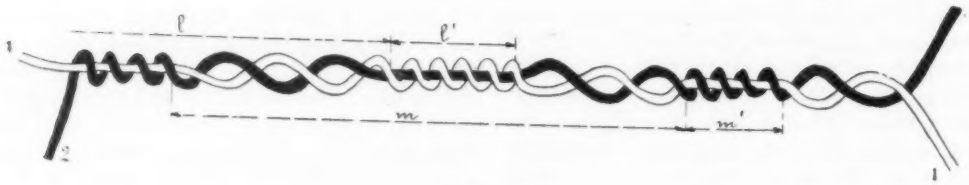


FIG. 69.

58, the base thread consisting of a 2-ply, 1-2. At Fig. 69 two threads, 1 and 2, are used, the effect being obtained by alternating them

Fig. 77 shows another device for making knotted yarn. Rollers 5 and 6 deliver the

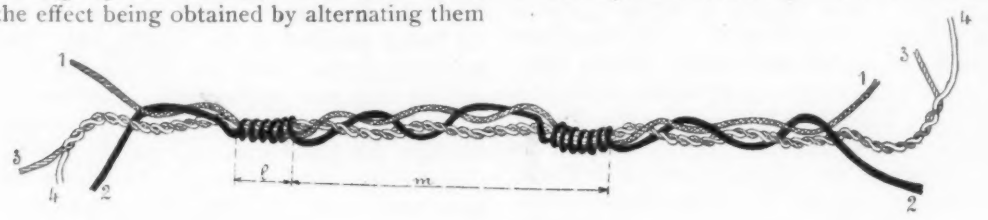


FIG. 70.

in the knot. Figs. 71, 72 and 73 show various similar forms of knotted yarn.

At Fig. 74 the threads, 3 and 4, alternate

yarn; the knot is formed by the thread, 1, on the base thread, 2. The teeth are removed from part of the circumference of the driving gear, 7, and in this way the rollers, 5 and 6,

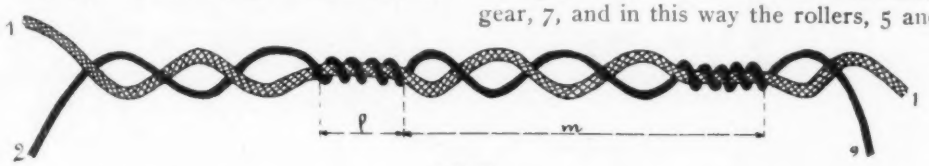


FIG. 71.

in forming the knot on the base, 2. The principal base is thread, 1, and the tie threads 5 and 6.

are stopped at intervals during which time the thread, 1, is wound in a knot around the base thread. Fig. 78 shows a device similar

FIG. 72.

Knotted yarn can also be made on the mule. Fig. 75 shows an attachment for this

to that at Fig. 76. Thread, 1, is the base; thread, 2, forms the knot. The base thread

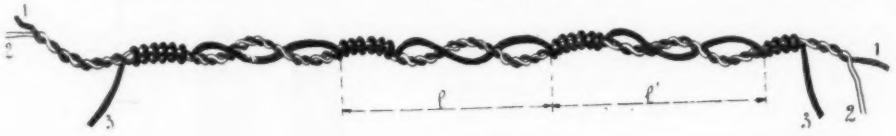


FIG. 73.

purpose. The thread, R, forms the knot around the roving, B. For this purpose the

passes through the rollers, 3 and 4, while the knot thread passes through the guide in the

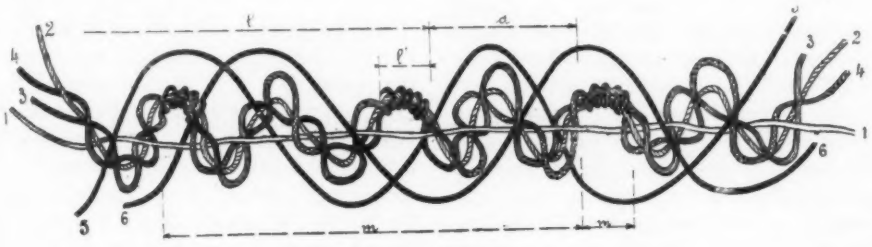


FIG. 74.

thread is passed through the eyelet to the end of the arm, E. This arm is oscillated by the cam, C''. Fig. 76 shows another form of the device for forming the knot.

lever, 5, swinging on the axis, 0. The cam, 0, vibrates the lever. The rotation of this cam is intermittent as the teeth are moved by the driving gear.

Fig. 79 shows an apparatus which is used extensively for making not only knotted yarn, but a wide variety of other kinds of fancy yarn. At the bottom of the frame are spindles on which the bobbins of the base yarn are placed. About 16 inches above the floor is a horizontal bar running the length of the machine and carrying the spindle, b, for the yarn to form the loop or knot. About 12 inches above this is a second bar of spindles on which are placed the bobbins, c, carrying the binder yarn. The base yarn from the bobbin, a, passes through the hollow spindle at b and c, and is wound on the reel, d, at the top of the frame. The speed of this reel regulates the speed of the yarn, the gear being driven positively by suitable connections at the end of the frame.

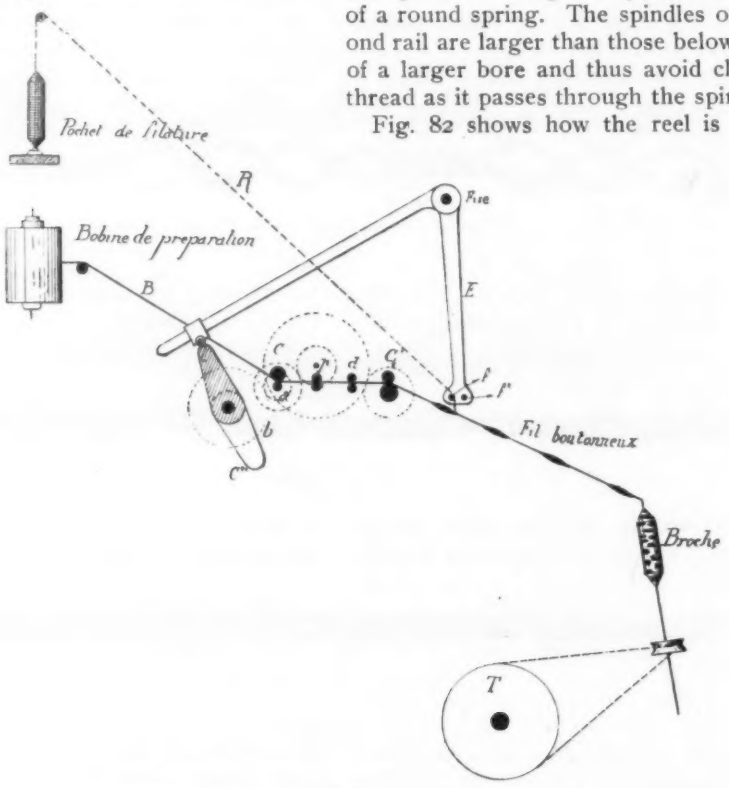


FIG. 75

The hollow spindle, used at b and c, is illustrated at Fig. 80. It consists of two copper tubes, f and g, one inside the other. One is fixed and the other is moved up and down. The last named is provided with a whorl, n, which receives the band from the drum, t. The tube, f, revolves on the tube, g, the latter being fastened to the spindle rail. The bobbin and yarn, which are to form the knot and the loop, rest on the whorl, being held by friction of the tube, f. The yarn passes through the guide eye, r, Figs. 79 and 81, placed above the bobbin and unites with the base yarn as soon as the latter comes from the spindle. The guide eye is the extension of a round spring. The spindles on the second rail are larger than those below to admit of a larger bore and thus avoid chafing the thread as it passes through the spindle.

Fig. 82 shows how the reel is driven in order to produce the knots. The shaft, M, carries the pinion gear, a, connecting with the gear, b. The latter carries a slotted crank, c, which is connected with the lever, f, the latter connecting with the ratchet, g, fastened to the shaft carrying the reel. The intermittent motion of the reel thus produces the knots. When the lever, f, moves forward the reel is stationary and the knot is formed. In order to produce a very hard knot, friction regulated by weight is applied to the bobbin

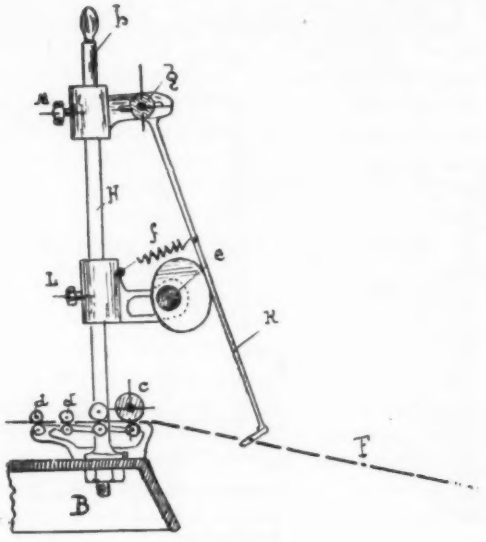


FIG. 76

carrying the knotted thread. The bobbins of fancy and binder yarn should be as small as possible as each revolution of the spindle delivers a quantity of yarn equal to the circumference of the bobbin. If the bobbin is much larger the difference between the delivery at the beginning and the end would cause a great irregularity in the fancy thread. This variation is reduced by regulating the friction on the bobbin. The size of the knots can be varied by changing the size of the pinion gear, a.

When the fancy thread is made with a binder the upper row of spindles should be driven as slowly as possible in order that the yarn may not catch on the knots. The guide eye should be well weighted in order to tie the fancy thread tightly and thus hold the knots firmly in place. The effects obtained with the guide eye tie threads can be varied by changing the speed of the drums t and t'.

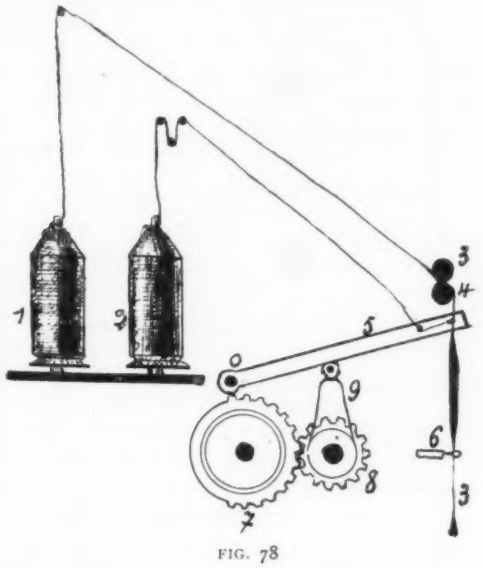


FIG. 78

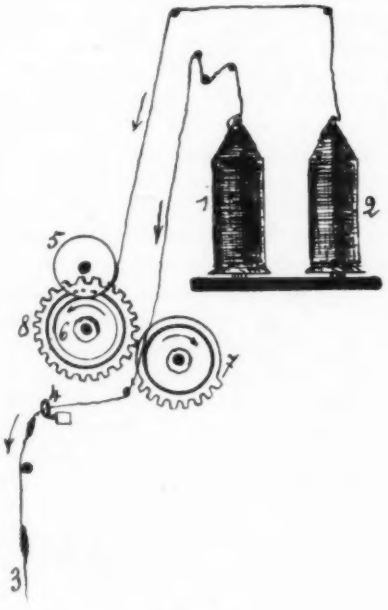


FIG. 77

Elongated knots. The knots in fancy yarn can be elongated by vibrating the guide eye, f, Fig. 55, which produces the base and knot threads. In this way the knot thread is vibrated on the base thread producing the effect desired. Fig. 83 shows a device for producing this vibration. The guide eye, f, is connected with a shaft running lengthwise of the machine. At the end of this shaft is fastened, e, the lever, a. The end of this lever is a roller, b, resting against the cam, c, upon the plate, d. By the revolution of this plate the cam and shaft, e, receive an oscillating movement, which can be varied by changing the cam.

Elongated knots can also be obtained by vibrating rails supporting the spindles of the frame shown at Fig. 79. A device for this purpose is shown at Fig. 84. The pinion gear, a, is geared to the driving shaft, M, and

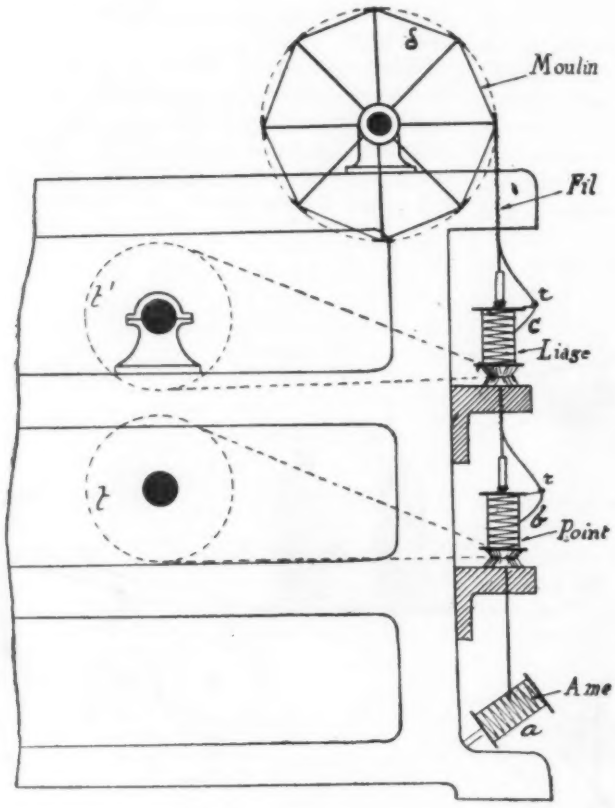


FIG. 79

FIG. 80

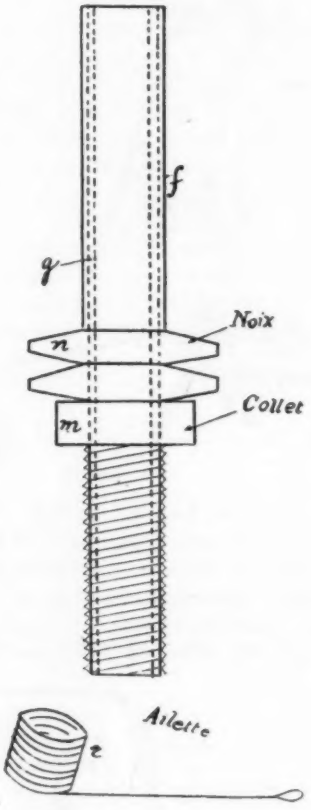


FIG. 81

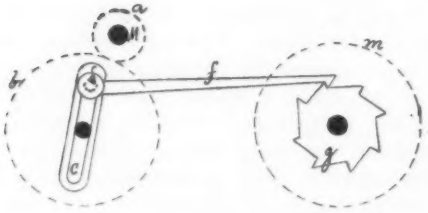


FIG. 82

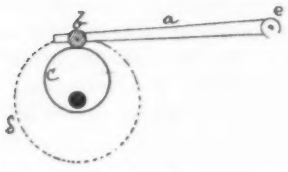


FIG. 83.

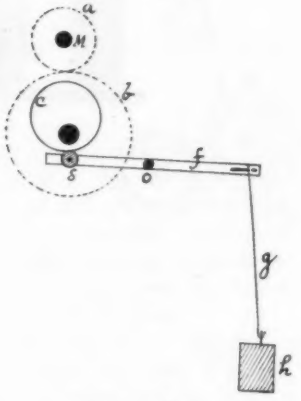


FIG. 84.

connects with the gear, b, carrying the cam, c. This cam vibrates the lever, f, which is

supported at o. The spindle rail, h, is supported at the hook, g, fastened to the lever. In this way the ring rail vibrates with the motion of the lever. The length of the knot is varied by changing the position of the axis on which the lever, f, swings.

(To be continued.)

BEATERS IN THE PICKER ROOM.

BY HENRY KREUZER.

Picking is undoubtedly one of the most important processes in the conversion of the cotton fibre into yarn or cloth, and yet very little importance is generally attached to it. If a family is hired by a mill and there is an old man or a lazy man among them, he is usually given a job in the picker room in order to keep on the rest of the family. The wages paid are smaller than for other jobs around the mill, but as much intelligence and brains are required for the successful running of the picker room as for any other department.

Mixing is a very important part of the running of the picker room, or rather of the whole mill. In England more attention is paid to the mixing than in this country, and there the mixing room is large enough to allow the cotton to be broken up into small pieces and spread out to dry as much as possible before being run through the dryer. To my mind mixing with a bale breaker is preferable to hand mixing, but in order to do this there should be room enough to open up twenty bales arranged to give the required average grade and for each bale to be sampled on each side before using.

The next step is to clean it in the pickers. This should be governed by the grade of the cotton used, the length of the staple, the number of machines, and the amount of work each machine is required to do. For the opener I prefer a 30-inch porcupine beater, and if the stock is short and very dirty it should be run about 600 revolutions per minute, which would open the cotton up very well; then an 18-inch knife beater in the breaker picker, running 1,200 revolutions per minute. If the stock is very leafy I should like a carding beater on both the intermediate and finisher pickers, running at about 900 revolutions per minute.

On the other hand if the stock is good middling 1 3/8 to 1 1/2-inch cotton, it would be sufficient to have a porcupine in the opener, a knife beater in the breaker, and either a knife or carding beater in the finisher (the former preferred) and dispense with the intermediate altogether.

The carding beater will clean the cotton better than a knife beater, but the larger the staple the greater is the tendency of the carding beater to curl the fibres, and while I believe it is a step in the right direction as far as the cleaning process goes, something should be done to stop the curling of the fibres before it forces the knife beater out of business. The knife beater is not perfect by any means and in incompetent hands will do as much harm as a carding beater.

It is not so much a question of how fast the beaters shall be run as how many blows an inch should be given to make the least curl or nep and get out the most dirt. This can be determined only by experience. I have made a number of experiments along this line, carrying them along into the yarn, which was reeled on a black board and labeled with a card bearing the particulars of the process followed in each case. Following is an illustration:

Cotton	Grade	Beaters	Blows per inch.
1 1-8	strict middling	1 porcupine 2 pins	92 on each pin beater
1 1-4	" "	1 porcupine 2 pins	80 on each pin beater
1 3-8	good middling	1 porcupine 1 knife 1 pin	62 on each
1 1-2	" "	1 porcupine 2 knife	62 on each
1 3-4	Sea Island	1 porcupine 1 knife	50
Egyptian		1 porcupine 1 pin	62

If the fibres could be fed in straight to the pin beater and the pins set close enough to hold the fibres straight and take them from the pin beater as the doffer takes the fibres from the cylinder on a card, then we should have an ideal beater; according to all authorities on carding and spinning the aim is to keep the fibres as straight as possible through each process. Until the carding beater can clean the fibres without curling them we shall always be confronted with the problem of carding or knife beaters.

Low class Indian cotton is used by the German spinners in making imitation yarns to be imported into England.

SIZE OF DOFFER RINGS ON FINISHERS.

BY JAMES HAWLEY.

In selecting rings for the finisher card great care and judgment must be exercised, as rings adapted for coarse, long wools will not answer for fine, short wools.

With the two-doffer system the top rings get more of the longest fibres than the bottom rings, for the reason that the main cylinder delivers to the top doffer first, and fibres that do not lay parallel to the direction of motion are likely to be caught by the top rings, thereby robbing the bottom rings of the projecting fibres. Consequently if the rings were the same width at top and bottom, the strands taken from the top rings would be heavier or larger than those taken from the bottom.

Equal weights might be obtained by setting off the top doffer far enough to accomplish this; but the result would be as unsatisfactory as it is unscientific; the entire card opposite the top ring would become unduly loaded, resulting in bad work. The difficulty is remedied not by setting on or off the top doffer (although this expedient may be resorted to to a limited extent), but by using narrower rings on the top doffer than on the bottom. Certain widths of rings may be used with certain grades of stock, which will give exact weights with both doffers set the same distance from the cylinder.

This would be the acme of perfection, so far as the width of the rings is concerned, but the carder is confronted with many grades and lengths of raw material, any two of which will not work the same. Here it is that good judgment based on experience becomes necessary in selecting rings that will give the best results with the least amount of setting on or off, for this latter procedure has its limits, beyond which we cannot go. It is necessary, therefore, to employ more than one set of cards, each set equipped with appropriate clothing, in order to handle all the various grades of stock successfully.

I have used rings on the top doffer 1/4 of an inch narrower than those on the bottom, and obtained good results with long, coarse wool, but for fine, short, straight wool this arrangement would not do at all. For the latter grades I would use a top ring 1/8 of an inch narrower than the bottom, and for medium grades 3/16 of an inch narrower. These figures are for cards where one strand is taken from each inch of carding surface.

I have used cards taking off 40, 48 and 60 strands from 40-inch finishers; 48, 50 and 60 strands from 48-inch machines, and 72 and 90 strands from 60-inch finishers. I have also used cards with three doffers, which in my opinion is at least one too many, as they are more complicated, unhandy and increase the carder's difficulties, while nothing very essential is gained that cannot be accomplished just as well by the use of two doffers.

Taking all these different sizes of cards and widths of rings into consideration, it becomes a matter of no small importance, and the carder's very best judgment must be exercised in selecting or figuring out the right width of rings.

ENGLISH NOTES.

(By our Special Correspondent.)

Another small reduction in the number of sheep in the United Kingdom is noted this year. The fall is of 30,000, being 1/100th of 1 per cent. Farmers seldom had greater encouragement to increase their flocks, and admitting the likelihood of a slight fall in price during this year, the clip should again be highly remunerative. It is perhaps worth adding that some farmers have persuaded themselves that tariff reform, which now appears distant, will make sheep still more profitable stock to raise. In view of all things, we may believe that the flocks will increase in number, and from their present 29 millions they may become nearer the 31 millions that existed six years ago. Our statistics of live stock are treated scrupulously by the officials that gather and collate them, but farmers are not too exact in making declarations. As with other figures, we have to take them less as absolute facts than as relative ones. Our returns indicate changes with some fidelity, but they cannot be taken literally.

Disputes over contracts between manu-

facturer and manufacturer in this country usually are settled by mutual agreement. It is not so easy to deal with merchants, and especially are those troublesome who buy yarn for Continental consumption. The habit of these, like so many American jobbers of cloth, is to put down contracts with no idea of keeping them in an unfavorable market. Hence it comes that the spinner is kept an unconscionable time pleading for "particulars," so that the order may be executed. In the end he perhaps has to promise to forgive and forget and to take a new contract to compensate for the default upon the old one. To make an end of this indefensible method of dealing has long been the ambition of worsted spinners and of the more reputable shippers. So the parties to the Bradford business in mohair and alpaca yarns have put a time limit, within which particulars for deliveries must be furnished. Alternatively the buyer must pay interest to the seller on the parts of bargains uncompleted. Beginning at 5 per cent. per annum, after three months of delay the interest rises 1 per cent. per annum per month. And at the end of 18 months the seller is due to receive full payment for the undelivered yarn, or such damages as a Chamber of Commerce arbitration may assess. The system is worth remembering by those who aspire to put American business on an equitable footing.

Blanket makers in Yorkshire, after an unprofitable year with a fair turn-over, are advancing rates 2 pence per pound. In view of the anticipated easing in wool values and the large stocks of blankets in second hands, the step threatens to check business severely. While a gradual fall in wool is contemplated, men are not found anxious to substantiate their opinions by heavy forward sales of raw materials at lower prices. The fact that they are looking for something better than mere speculative movements has no doubt its influence. Hosiery continues to be the branch which shows itself most responsive to the domestic trade revival.

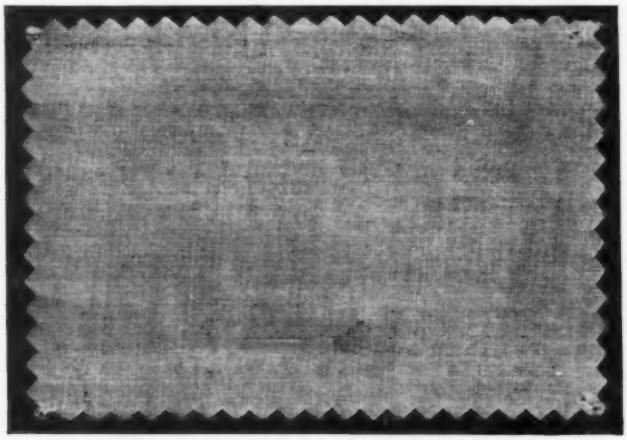
Flax industry makes leeway in the United Kingdom. In 1900 there were 114 spinning, 178 weaving and 42 spinning and weaving mills. In 1905 returns there were 96 spinning, 198 weaving and 31 weaving and spinning factories. Of course, the loss was in the smaller, rather than in the larger concerns, but flax must be counted foremost among the perverse trades. When weavers can make money, spinners lose, and vice versa. Prices of cloth and yarn run contrary, and more so than in the worsted business, which has furnished latterly some choice expositions of the incompatibility of prices for materials.

During the year just ended, 8,020 bales (400 lbs. approximately) of cotton have been received from British West India and West Africa. The proportions from each is almost exactly a half, and this represents fairly the first fruits of the colonial cotton movement. Of a gross import of 4,431,578 bales of raw material, some 4,021,233 bales were reserved for home consumption. Supplies for British mills during the year have been drawn as follows: 85.2 per cent. from America, 14.8 per cent. from Brazil, East India, Egypt and sources of less importance. In other words, 3,326,596 bales of American cotton have been entered and retained, and 268,911 bales of the same have been re-exported. The record crop of Egyptian led to the purchase of 504,906 bales, of which 104,919 were on foreign account. Fears are now expressed that cultivators in Egypt are taking too much out of the soil by cropping cotton twice in successive years. Cheapness of the East Indian staple has provoked larger purchases on the Continent than in England. For domestic use we have retained only 56,102 bales.

Among minor improvements which gain ground here may be reckoned the scalloping of the edges of patterns. The saw-tooth or zig-zag edge is a pretty effectual check in unraveling, and its consequent untidiness. Machines of more than one make for scalloping are on the market, and they differ chiefly from the regular guillotine machine in the knife, which is designed to give the cross-cut at one below. For card patterns and quality patterns destined to be much

handled, both makers and merchants are buying these small machines.

"Many men of many minds." And possibly it matters little what any individual Englishman considers the most remarkable trait in American character. A textile manufacturer, back from an extended stay in the States, is telling his acquaintances that the evening liberality and the morning meanness of the American are the most wonderful things in the country. The customer who, with reckless needlessness, "stands you a $40 dinner at night, gets up in the morning to do you for a cent in business." That is a practice my friend finds hard to understand and whether he should have been deprived of his dinners or permitted to retain his cents, readers may very well settle to their own liking. Suffice it to point to the seeming incongruity.



SAMPLE WITH SCALLOPED EDGES.

In the way of exports of textile machinery, nothing more extraordinary has been made lately than the 66 cases of hand spinning wheels sent to South Africa by the Swiss. The 450 wheels are the surplus from private lumber rooms, sent as Xmas offerings to Boer women. South Africa, like parts of Ireland, apparently affords prospects for the textile industry in the households.

It may be of some comfort to Americans that have experimented in mohairs, without making an immense success of them, to hear what a Bradford paper says on the subject: "With this 100 per cent. tariff Americans fight at a great advantage, which has thus far been neutralized in part by want of experience. But this will not be the case always. Great advances have been made and yearly the competition with British mohairs grows keener."

The weave pre-eminently for cotton lining makers to study is the Venetian, or warp-faced twill which is driving the Italian, and all other weft-faced makes, before it. After the weaving comes the problem of dyeing with aniline black, mercerizing and the subsequent pressings and steamings, which give the cloth a permanent bright finish. These latter operations have been brought to a high perfection by the Bradford Dyers' Association. It is difficult to resist the conclusion that a repetition of their triumph over difficulties would be highly lucrative in the States.

A street ballad, sung in Ireland fifty years ago, will commend itself to American woolen manufacturers in these times of scarce wool:

"Come all ye good people, keep sheep, keep sheep;
Come all ye good people, keep sheep, keep sheep;
The bones will make broth
And the wool will make cloth;
Come all ye good people, keep sheep, keep sheep."

WOOL GROWING.

BY ARTHUR STONE.

A correspondent is curious to know why the British Isles, relatively to their area, produce twelve times as much wool as do the United States. Put in that way the disproportion looks formidable indeed. Considered in relation to the respective populations of the two countries, the wool production is more nearly equal; for with something like twice our number of inhabitants the States yield something near twice the quantity of wool.

In the United Kingdom the total size of our flocks has remained virtually stationary for thirty years. The mean average total is some thirty millions and the numbers fluctuate within 10 per cent. of that mean. This steadiness is in marked contrast to the tendency to recede observable in some European countries. In thirty years, for example, the German flocks have dwindled from twenty-five millions to ten millions.

The constancy of the British farmer to sheep raising is explained by the fact that he finds them not unprofitable. He is a man in what is called a temperate climate, farming at a certain rental, hedged about by a set of land laws that are not perhaps the best in the world. The laws do not encourage overmuch the improvement of agricultural land. Grain of many varieties can be grown to more profit elsewhere than here. And the farmer, in contriving to utilize his opportunities to the best advantage, makes a point of maintaining so many sheep. He grows them not only, and indeed not chiefly, for wool. Their value as mutton is the major consideration and in days when frozen carcasses are brought all the way from New Zealand to meat. However, as he possesses so much pasture, and so much arable land suitable for growing roots for winter feed, and as he can count on money for wool and money for mutton, a certain number of sheep are kept upon most farms of importance.

My correspondent seeks further to know how dogs in this country are restrained from worrying sheep. According to the law, I may shoot any dog caught in the act, but not before or after the act. The owner of sheep London at a cost in freight of only 18 cents each, he has to face keen competition for his injured or killed may recover damages from the owner of the dog, but the onus is on him to show that the dog was of worrying propensities. By the English common law a dog is entitled to its first bite gratis. Happily, the freemasonry between shepherds prevents the dog nuisance from becoming so serious as in America and Australia. Dog owners are usually glad to be rid of a known rogue and as we have no "dingoes" or wild dogs, the flocks are fairly secure.

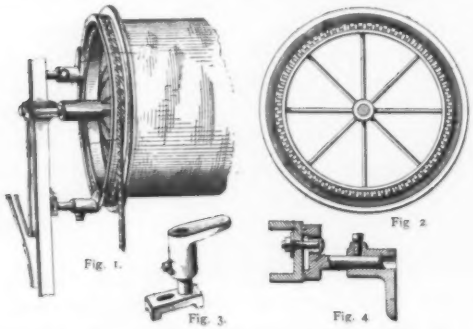
Nests of young foxes in the plantations give trouble sometimes among the lambs, and the way a sheep-growing member of my family combats them is by a $5 reward for their heads. Where holdings are close and sheep are raised by neighbors for miles around, a sharp eye is kept for natural enemies and these die suddenly and are buried unostentatiously behind a wall. Pleuropneumonia and the other dread diseases to which sheep are liable are met scientifically by farmers instructed by state lecturers, leaflets and by newspaper articles. Considerable medical and even surgical skill is found among sheep farmers and shepherds, and so far as economic circumstances allow, the sheep farming business is fairly well managed by men in the chief growing districts.

In Scotland great expanses of rough heather-clad land are fit for nothing but mountain sheep and Scotland yields thirty-six million pounds of wool a year. Ireland is good for twenty-four millions and Wales for twelve millions. Thus, at least one-half of the clip of the Kingdom comes from the wilder country peopled by the "Celtic fringe." The two great counties named after Lincoln and York produce twenty-one million pounds and the others in differing ratio, and according to their sizes yield a quota. The fleeces from the various districts are of varying weights, denoting the difference of quality and breed, for instance, the Welch fleece averages only 3 1/2 pounds and the Lincolnshire 9 1/2. A good amount of attention is bestowed on the breeding of the animals, in view of wool and mutton prices and of the climate and soil of the districts. So long as the present balance of causes is maintained, it may fairly be supposed that the pastoral industry in the United Kingdom will remain at about its present level.

A GUARD FOR WARP BEAMS.

The device shown in the accompanying illustration has recently been patented in this country and is thus described by its inventor:

It has been found that the most satisfactory form of let-off for warp-beams is that of the rope-friction type. A detachable rim for the application of the rope is usually employed, this rim being placed upon a filled beam after the latter has been set in the loom. It is necessary, however, to hold the rim upon the beam in order that the rotation of the beam may be retarded, and to accomplish this end various means have been resorted to, among which set-screws have been employed, while in other instances plugs have been driven between the rim and the beam-head, and in other cases leather is



placed between the rim and the beam-head in attempts to hold the rim securely upon the head. These expedients have proved more or less unsatisfactory, the rims frequently slipping off while the loom is in motion, caused by the screws breaking or the plugs and the leather falling from between the rims and the beam-heads. This has caused the breakage of the rims, damage to the cloth being woven, and much annoyance and expense not only to the loom-tender, but also to the manufacturer.

The object of the present invention is to provide means to overcome these objections and by the employment of which the rims may be effectually held upon the beam-heads without liability of displacement until their removal is necessary.

Fig. 1 is a view of one end of the warp beam; Fig. 2, an end view of the beam and let-off; Fig. 3, a perspective view of the guard; Fig. 4, a sectional view of the same. The beam-head is provided with a series of peripheral teeth, and mounted upon the beam is the rim of a rope-friction let-off. The rim is provided at its inner side and at spaced intervals with inwardly-projecting teeth, which may be either arranged in sets or extended around the entire inner surface of the rim, the teeth affording means for engaging the rim with the beam-head so that the rim rotates with it.

It is the object of the present invention to provide means whereby the rim is effectually held upon the beam-head, and to accomplish this a series of guards are employed. These guards are interposed between the rim and the adjacent side of the loom-frame and are preferably arranged at opposite points in order to exert their holding action at the most advantageous points upon the rim.

By referring to Figs. 3 and 4 the detail construction of the guards is clearly shown, and it will be noted that each comprises a guard member and an attaching member. The guard member comprises a contact-plate, to one side of which is connected a sleeve, which extends at substantially right angles from the plate and is provided with a set-screw projecting into the bore of the sleeve. From one face of a fastening plate a stud projects, which is arranged at substantially right angles to the plate and is designed to fit the bore of the sleeve and to be held by a set-screw.

Thus it will be seen that the two members of the guard may be securely held together, but at the same time the guard member is adjustable throughout the length of the stud in order to adapt the guard for an extended range of use in conjunction with let-off rims of varying thicknesses. The fastening-plate is also provided with an elongated slot, through which is passed a bolt to anchor the attaching member to the loom-frame. This slot permits of adjustment of the plate upon the bolt after the latter has been fixed to the loom-frame. The plate is also provided at its face opposite to the stud with a series of feet, arranged at the corners of the plate to reduce the surface of contact with the loom-frame.

Each guard is firmly bolted to the inner

side of the loom-frame adjacent to the beam-head, and adjusted upon the stud in order that the plate may engage the side of the rim. The set-screw of the guard is tightened in its adjusted position upon the stud, and is thus held in fixed relation to the rim, but not in such close contact as to interfere with the rotation of the warp-beam. The latter is thus permitted to rotate freely in the operation of weaving to feed off the warps, and in the rotation of the beam displacement of the rim is absolutely precluded. After the warps have been entirely removed from the beam the guards may be readily removed to permit removal of the rim from the beam, and after the setting of a new beam in the loom the rim is applied thereto and the guards readjusted to hold the latter upon the beam-head.

SPOOLING AND DRESSING WOOLEN AND WORSTED YARN.

BY HENRY LUGENBEEL.

Many mill managers watch the books of the weaving and finishing rooms, as the production depends entirely on these two departments. In this way they are apt to lose sight of the conditions in other departments, among which are the spooling and dressing processes. Good warps are essential to good results in weaving and finishing. The starting point for good warps is good yarn. Some managers appear to think that anyone can look after the spooling department, but in fact it requires a good man to manage the help, keep the machines in order and regulate the tension on the yarn.

I have been in rooms where the man in charge of spooling would use the same tension on 4-run yarn that he had on 1 3/4-run yarn. The fine yarn was strained and the spools were as hard as a rock; the elasticity was taken out of the yarn and when it came to be woven it would break short, instead of having the natural give. In changing from one size of yarn to another in spooling good judgment is necessary. No fixed rule can be given for the tension.

Tying knots is another important point. How many times we hear the weaver say: "Not one of those ends break. All are knots that have slipped in coming through the harness and reed." If the spooler tenders are not taught to tie good knots, they are a detriment to the mill. The overseer should adopt a system by which he can know who ties the poor knots. Square knots only should be allowed. What is called the granny knot always causes trouble in weaving.

Another important point is to have the spools as free from holes as possible. Every hole makes a tight end, which, if not taken out by the dresser tender, causes an irregular strain on the warp in weaving, and defects in the finished goods. Care must also be taken that the spooler guides do not vibrate so far as to cause one thread to ride the adjacent end; also that one end of the spool is not hard and the other end soft, a defect that may be caused by not having the spool evenly weighted. Spools with loose heads or bent arbors should not be used.

After the yarn is spooled it should be weighed and ticketed with the weight, length, and name or number of the spooler tender. By weighing the spooled yarn and the waste made by the spooler tender the overseer can keep his waste account at a minimum. The better the yarn is spooled the larger and more perfect is the production in the subsequent processes.

When the dressing overseer receives orders for a given number of pieces the first thing is to see how many sections he requires. Some mills give only the number of ends for a warp and the width in the loom; the rest is left to the overseer. I think a much better system is for the designer, when he makes up his styles, to be sure that all can be made with as few sections as possible and have them put in form for the dressing room. This puts a check on the designer. When he gets out the line he can make the changes at the start and not have the dressing overseer after him because a warp with 1,458 ends has to be made with nine sections. Having the number of ends for the section and the number of sections for the warp, the number of ends of each color for a section must be determined.

The next thing is to see if the yarn is ready

and care should be taken never to start a warp unless there is yarn enough to finish it. Beaming off part of a warp to lay on the floor until another lot comes along is not only expensive, but involves the risk of having two shades in the finished cloth.

We are now ready to pick the pattern and tie in the spools. After the yarn is brought as far as the leice reed each pattern should be looked over to see that every thread is in its proper place. Knowing the width in the loom and the number of sections, we place a certain number of ends in each dent of the guide reed. After reeding it should be about one-quarter of an inch wider than the width of the section on the reel. Next see that the section pins are in proper position. The clock is marked for the number of cuts to be put on the warp, a leice is taken and the dresser started.

A word about cut marks. It is a good idea to put the cut marks on the first section or next to the selvage with paint. A piece of paper folded over the painted yarn will prevent staining. This will remove all chance for argument between the weaver and the dresser as to the responsibility for cuts varying from 45 to 60 yards in length when they should measure 52 yards. By using paint for the cut marks and having the weaver cut in the middle of the paint, there is but one that can be at fault for irregular lengths. Good section building depends on the skill of the dresser tender. If the yarn in the guide reed is a quarter of an inch wider than that required on the reel, the guide reed can be turned at an angle that will keep the yarn firmly against the section pins. After the first section is made care must be taken that the yarn in the other sections does not rub against it. The section must be level or breakage in beaming will occur. A dresser tender that takes pride in his work will have very few tie-backs. When tying in a spool the knots should be spread aad not brought straight across a section.

Section marks often cause imperfect pieces. They may be caused by not having the same tension on each section, or by the belts slipping more on some sections than others. The heads of the spools should not rub on either side of the rack or creel. When the spools run true the dresser tender must use his judgment as to the tension to be used. When beaming the heads of the warp beam should be secure and in line with the warp on the reel. After the warp has been tied to the leader and one round of the yarn wound on the beam, the beamer should be stopped and the yarn spread as evenly on the beam as possible. Excessive strain on the yarn in beaming should be avoided. If a compresser is used there is no need of weighting so heavily. Breaking of the yarn between the sections is a frequent trouble in beaming, caused by one section riding the other. When but two rounds of the yarn remain on the reel, the beamer should be stopped and any threads ready to break should be tied so as to bring all ends in the leice. At the last round ends are sometimes found around the reel; these too should be tied in to make sure that all the ends are in the leice when the warp leaves the beamer.

THE CARPET INDUSTRY.

Thoughts suggested by a glance through the evidence before the British Tariff Commission.

From time to time the world is advised by newspaper items that it is idle folly to believe that under free trade the industries of Great Britain are suffering by the narrowing of her foreign markets.

The result to their great silk industry, which thrived so well and kept seventy thousand people employed in the various processes in the manufacture of silk fabrics, under adequate protection, dwindled as protection was reduced, until it left their shores entirely under free trade. It found a home in the United States under a protective tariff and as that tariff was made more prohibitive against importation, the industry continued to thrive and multiply until this people are the largest buyers of raw silk and the largest producers of manufactured silk fabrics in the world.

It may not be out of place to consider a lesson suggested by the great International Exhibition of the Crystal Palace, London, 1851. At this time the little islands were the workshops of the world. It was the first great opportunity for the nations to visit a

great school to learn the methods by which Great Britain ministered to the wants of the world's markets in manufactures.

At this time Britain excelled in every branch in which science and skill held sway, and they did in all except art. In this, however, by the influence and support of the Prince Consort, a change was soon introduced, which quickly brought about the wonderful improvement in color and design as was demonstrated in the French Exposition held only a few years later.

At this initial exhibition the nations were invited to visit the machinery in motion and see how everything was made. They did. From that year to the present day they have been hard at work with schools of science and chemical laboratories, studying out better methods than those of the old "rule of thumb." Their students of engineering and machinery produced greater quantity and better made. Their governments, one by one, developed their home markets and, one by one, closed their ports to Britain's manufactures.

No greater proof is wanted that their great industry of carpet manufacturing is following in the same decline as did the silk industry, than the evidence submitted at the recent tariff inquiry.

It would not be complimentary to such an estimable body of gentlemen to characterize their views. Macawber like, they hope "something will turn up" to prevent ultimate disaster. Excuses are presented that are unworthy in men of the class who constitute the carpet manufacturers of Great Britain.

They claim their designs and colorings are stolen. Have they not set the example and borrowed (?) from the orient? Do they deny that their travelers are ever on the hunt, when visiting this continent anyway, to procure the latest and best things from the looms of the States and Canada, and do they not copy the design?—not the colors, as the bright sunshine of this land begets a preference for brighter tints than the befogged climate calls for on the tight little islands.

They claim that freight is against them and yet the heart of the shipping ring is in their midst and they can deliver carpets to all parts of the world at cheaper rates than any other country.

Though their factory help have learned their technical ability, generation after generation, in the same mill, yet no effort has been made to improve their condition of living as has been done in protection countries and because foreign up-to-date methods produce more goods to a unit of help, which earns better pay, a piteous plaint goes up that they cannot help themselves for fear of a strike.

Who is to blame for such a condition? Surely not the alien manufacturer, but to read the evidence, one would almost think that is what is expected to be believed.

Under the blessing (?) they have cherished as a fetich—free trade—their home market has been importing a third more than their total exports, yet they say they cannot keep their looms running full.

Two-thirds of those who gave evidence are now in favor of a customs tariff, ranging from 10 per cent. to 40 per cent. They are nearly all in favor of an entire wiping out of the customs tariffs of nearly every other country. They are satisfied with the conditions in Canada as no doubt they hope to close up the Canadian industries under present conditions.

The deductions are not in favor of so great a people.

The lesson is plain. With tariffs in every country to protect their manufactures, to aid in building up the country, to keep people employed, to warrant industrial education, to create national wealth, any country that reduces its tariff to admit the manufactures of other countries to the detriment of the interests of its home industries—no matter for what reason—is committing suicide.

SCRUTATOR.

In 1340, Thomas Blanket, who had begun the manufacture of cloth in Bristol, was ordered by a local court to pay a heavy fine "for having caused various machines for weaving and making woolen cloths to be set up in his houses, and also for having hired weavers and other workmen for this purpose."

Questions and Answers.

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Direction of Twill.

Editor Textile World Record:

What is the proper direction of a three-leaf diagonal twill? That is, when facing the loom should it run from left to right, or from right to left? Longmeadow (612).

Twills usually run to the right, but there is no fixed rude in regard to this matter. Occasionally the designer of a fabric finds it best to reverse the direction of the twill.

Yarn for Bleaching.

Editor Textile World Record:

What is the usual method of making up yarn for the bleaching process? Is it linked together, skein by skein, or is it tied together with ropes, similar to a machine for scouring wool yarn, and bleached in a machine? If so, can you tell me the name of the party making this machine?

Omar (607).

Yarn for bleaching purposes is usually made up into ten-pound bundles, or heads weighing about two pounds, made into balls by the reeler before coming to the bleach house. Some bleachers boil out the yarn in the bundles or heads in the lye boil in kiers, and then open up the bundles and finish the bleaching by the circulation process, afterward soaping and tinting the yarn in an ordinary yarn box on sticks. Others, especially thread bleachers, link the skeins together in a loose chain by drawing the skeins through one another. The skeins are tied together only on the ends, so they will not come apart.

When the bleaching is done in this form it requires a plant arranged for the purpose with kiers, tanks, dumpers and extractors. The skein yarn is linked on yarn posts by boys, and when the bleaching is finished the yarn is opened up, extracted and dried. The Butterworth Sons Co., Philadelphia, make a bleaching plant of this description, and I have seen a very good one at the works of the Boston Thread Co., Providence.

Dunloe.

Boiling Gum from Silk.

Editor Textile World Record:

Can you give me any information regarding the process of boiling gum from silk organzine? We wish to make ribbons in the gum, then piece dye, and want to know if dyer's soap will dissolve the gum from the silk. Bradley (610.)

I do not encourage the idea of piece dyeing silks in the gum, as light shades, and especially tints, are very likely to be dyed uneven. I would suggest boiling out the gum with a neutral soap before dyeing, say, about two ounces of soap to one gallon of water, and boiling for half an hour or so until the gum has disappeared. Dyer's soap is likely to be harsh on silk; if it is too much on the alkali side it tends to destroy the lustre.

Jameson.

I used to remove gum from China and Japan silk before dyeing. I ran the pieces in a 5 per cent. soda crystal solution for 20 minutes at 140 degrees F. then in another vat with 20 per cent. of good soap for 100 pounds of goods, starting at 100 degrees F. and boiling for 40 minutes.

Frederick Fuller.

Mexican Fibres.

Editor Textile World Record:

Enclosed are two samples of Mexican fibres, jolocin and istle. Can you give me any information in regard to their commercial possibilities?

Nassau (613).

These samples were submitted to Chas. Richards Dodge, who writes as follows:

Jolocin is the last or inner bark of a Tiliaceous tree, which abounds in Central America and Southern Mexico, belonging to the genus Heliocarpus. There are several species, H. Americanus being the most common. Jonote fibre has little value as a textile as it is simply the papery layers of the bast as stripped from the raw bark with no preparation save macerating for a short time in water. It is chiefly employed for rude cordage and mats, though it would make good paper. It is doubtful if it could ever be employed commercially as there are so many better fibres which can be produced as cheaply; besides, the fibre cannot be secured without destroying the trees, which are of considerable size. The fibres of the different species are variously known as Jolocin, Jonote, Tolotzin, etc., and belong to a large class of paper-like bast fibres derived from the bark of tropical trees. The fibrous layers of inner bark from some of these, such as the "Cuba bast," are so firm that they are

employed as cigarette wrappers or for millinery braid, to be made into summer hats. In others, of softer structure, the layers break up or separate into a fine network of fibres, and somewhat resemble lace. Such is the celebrated "lace-bark" of Jamaica.

The fibre marked "istle" is not the true istle or "tampico" fibre, but a much finer form, smoother and whiter in color, derived from some species of Agave not used commercially. As the sample sent is in short lengths—not over six inches—it is difficult to say just what the fibre is. The istle of commerce is not so white, and is stiffer and coarser. This was described in The Textile World Record, November issue.

Equipping a Spinning Plant.

Editor Textile World Record:

Kindly give a list of the machinery for a spinning plant with a weekly capacity of 12,000 pounds cotton yarn, divided as follows: 4,000 pounds 20s warp, 4,000 pounds 20s hosiery and 4,000 pounds 60s. Johnson (617).

Assuming the 20s warp is not to be made into ply yarn it will require about 800 twister spindles to make the remainder of the 20s into 2-ply, and a spindle speed of about 6,000 r. p. m. would be necessary on these twisters. The 60s can be made into 2-ply with 3,200 twister spindles producing about 1 1/4 pounds per spindle, with a spindle speed of 8,000 r. p. m.

Using double roving in the spinning process for all the yarns and employing three processes of fly frames for the 20s and four for the 60s, the following table gives the number of spindles required in each process, with speed and production. Also the approximate draft, and weight or counts of stock at each process.

Machine	Total lbs. prod'cd	lbs. per del'v'y	Total del'v'r's or spindles.	W'ght., counts, or hanks.	Approx. draft.	Dia. of Front Roll.	R.P.M. of Front Roll.	Turns per inch.	R.P.M. of spindle.	Remarks
										Beater
Breaker Picker	13640	13640	1	14 oz. pr. yd.	1½	9″	6.6			1500 r. p. m.
Finisher "	13230	13230	1	12 " "	4½	9″	7½			
Cards	12600	700	18	60 grs. "	83	27″	10			
Drawframes 3 processes each making	12560	698	18 in each proc's	55 " "	6 in. 1st and 2d 6½ in. 3d	2″	183			
Slubbers	12462	67	186	75 hk.	5	1¼	117	1.00	500	
Intermediates	12376	34	364	1½	1⅓	1⅛	140	1.47	728	
Roving Frames	12264	12	1022	4	4	1⅛	132	2.4	1120	
Jack Frames	4082	3	1361	12	6	1⅛	98½	4.16	1450	
Spinning	4000	5	8000	60's	10	1	90	31	8800	
"	4000	2½	1600	20's	10	1	150	12½	6000	
"	4000	2¼	1778	20's	10	1	135	21.23	9000	

Allowing 20 per cent. waste we should require about 34 bales of cotton per week. J. T. B.

Schreiner Finish.

Editor Textile World Record:

Will you give me some information regarding the finish of cotton goods called schreinering? Panama (619).

The Schreiner finish, so-named from the inventor of the process, consists in running the goods through calenders in which the rolls are engraved with very fine lines, 250 or so per inch. The following account of the process is taken from "The Chemistry and Practice of Finishing," by Percy Bean:

This finish has in recent years almost superseded the hot press finishes on such cotton goods as linings, Italians, zanellas, sateens, etc. When the schreinering process is combined with mercerizing it gives the nearest approach to silk ever obtained, and on this account it has carried the field against most other processes of lustring.

"Schreinering is simply a form of embossing, the main difference between the schreiner patterns and the ordinary slash line patterns being in the increased number of lines or grooves to the inch impressed on the fabric in the former case. Until recent years, slash line patterns had seldom been engraved to more than 120 grooves to the inch, and the famous action of the Bradford Dyers' Association against other finishers that made use of fine slash lines, ignoring Schreiner's patent, is fresh to all memories. Schreiner's claim was based on the fact that his process engraved 250 or more of his slash lines to the inch, a number sufficient to escape notice by the naked eye. In his English specification he made the mistake of wrapping this plain fact up in complicated phraseology, and in consequence thousands of pounds were wasted in trying to substantiate his claim, and an equally large amount was spent by opponents in fighting it. In the end Schreiner lost his patent rights, and this finish is now open to all comers in the United Kingdom. Numerous lawsuits are still go-

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Editor Textile World Record:

Can you give me any information regarding the process of boiling gum from silk organzine? We wish to make ribbons in the gum, then piece dye, and want to know if dyer's soap will dissolve the gum from the silk. Bradley (610.)

I do not encourage the idea of piece dyeing silks in the gum, as light shades, and especially tints, are very likely to be dyed uneven. I would suggest boiling out the gum with a neutral soap before dyeing, say, about two ounces of soap to one gallon of water, and boiling for half an hour or so until the gum has disappeared. Dyer's soap is likely to be harsh on silk; if it is too much on the alkali side it tends to destroy the lustre.

Jameson.

I used to remove gum from China and Japan silk before dyeing. I ran the pieces in a 5 per cent. soda crystal solution for 20 minutes at 140 degrees F. then in another vat with 20 per cent. of good soap for 100 pounds of goods, starting at 100 degrees F. and boiling for 40 minutes.

Frederick Fuller.

Mexican Fibres.

Editor Textile World Record:

Enclosed are two samples of Mexican fibres, jolocin and istle. Can you give me any information in regard to their commercial possibilities?

Nassau (613).

These samples were submitted to Chas. Richards Dodge, who writes as follows:

Jolocin is the last or inner bark of a Tiliaceous tree, which abounds in Central America and Southern Mexico, belonging to the genus Heliocarpus. There are several species, H. Americanus being the most common. Jonote fibre has little value as a textile as it is simply the papery layers of the bast as stripped from the raw bark with no preparation save macerating for a short time in water. It is chiefly employed for rude cordage and mats, though it would make good paper. It is doubtful if it could ever be employed commercially as there are so many better fibres which can be produced as cheaply; besides, the fibre cannot be secured without destroying the trees, which are of considerable size. The fibres of the different species are variously known as Jolocin, Jonote, Tolotzin, etc., and belong to a large class of paper-like bast fibres derived from the bark of tropical trees. The fibrous layers of inner bark from some of these, such as the "Cuba bast," are so firm that they are

employed as cigarette wrappers or for millinery braid, to be made into summer hats. In others, of softer structure, the layers break up or separate into a fine network of fibres, and somewhat resemble lace. Such is the celebrated "lace-bark" of Jamaica.

The fibre marked "istle" is not the true istle or "tampico" fibre, but a much finer form, smoother and whiter in color, derived from some species of Agave not used commercially. As the sample sent is in short lengths—not over six inches—it is difficult to say just what the fibre is. The istle of commerce is not so white, and is stiffer and coarser. This was described in The Textile World Record, November issue.

Equipping a Spinning Plant.

Editor Textile World Record:

Kindly give a list of the machinery for a spinning plant with a weekly capacity of 12,000 pounds cotton yarn, divided as follows: 4,000 pounds 20s warp, 4,000 pounds 20s hosiery and 4,000 pounds 60s. Johnson (617).

Assuming the 20s warp is not to be made into ply yarn it will require about 800 twister spindles to make the remainder of the 20s into 2-ply, and a spindle speed of about 6,000 r. p. m. would be necessary on these twisters. The 60s can be made into 2-ply with 3,200 twister spindles producing about 1 1/4 pounds per spindle, with a spindle speed of 8,000 r. p. m.

Using double roving in the spinning process for all the yarns and employing three processes of fly frames for the 20s and four for the 60s, the following table gives the number of spindles required in each process, with speed and production. Also the approximate draft, and weight or counts of stock at each process.

Machine	Total lbs. prod'cd	lbs. per del'v'y	Total del'v'r's or spindles.	W'ght., counts, or hanks.	Approx. draft.	Dia. of Front Roll.	R.P.M. of Front Roll.	Turns per inch.	R.P.M. of spindle.	Remarks
										Beater
Breaker Picker	13640	13640	1	14 oz. pr. yd.	1½	9″	6.6			1500 r. p. m.
Finisher "	13230	13230	1	12 " "	4½	9″	7½			
Cards	12600	700	18	60 grs. "	83	27″	10			
Drawframes 3 processes each making	12560	698	18 in each proc's	55 " "	6 in. 1st and 2d 6½ in. 3d	2″	183			
Slubbers	12462	67	186	75 hk.	5	1¼	117.	1.00	500	
Intermediates	12376	34	364	1½	1⅓	1⅛	140	1.47	728	
Roving Frames	12264	12	1022	4	4	1⅛	132	2.4	1120	
Jack Frames	4082	3	1361	12	6	1⅛	98½	4.16	1450	
Spinning	4000	5	8000	60's	10	1	90	31	8800	
"	4000	2½	1600	20's	10	1	150	12½	6000	
"	4080	2¼	1778	20's	10	1	135	21.23	9000	

Allowing 20 per cent. waste we should require about 34 bales of cotton per week. J. T. B.

Schreiner Finish.

Editor Textile World Record:

Will you give me some information regarding the finish of cotton goods called schreinering? Panama (619).

The Schreiner finish, so-named from the inventor of the process, consists in running the goods through calenders in which the rolls are engraved with very fine lines, 250 or so per inch. The following account of the process is taken from "The Chemistry and Practice of Finishing," by Percy Bean:

This finish has in recent years almost superseded the hot press finishes on such cotton goods as linings, Italians, zanellas, sateens, etc. When the schreinering process is combined with mercerizing it gives the nearest approach to silk ever obtained, and on this account it has carried the field against most other processes of lustring.

"Schreinering is simply a form of embossing, the main difference between the schreiner patterns and the ordinary slash line patterns being in the increased number of lines or grooves to the inch impressed on the fabric in the former case. Until recent years, slash line patterns had seldom been engraved to more than 120 grooves to the inch, and the famous action of the Bradford Dyers' Association against other finishers that made use of fine slash lines, ignoring Schreiner's patent, is fresh to all memories. Schreiner's claim was based on the fact that his process engraved 250 or more of his slash lines to the inch, a number sufficient to escape notice by the naked eye. In his English specification he made the mistake of wrapping this plain fact up in complicated phraseology, and in consequence thousands of pounds were wasted in trying to substantiate his claim, and an equally large amount was spent by opponents in fighting it. In the end Schreiner lost his patent rights, and this finish is now open to all comers in the United Kingdom. Numerous lawsuits are still go-

ing on about it in other countries, especially Germany, where the patent office has granted the patentee a specific range in the number of lines, viz.: from 5 to 20 lines to the millimeter. This represents about 125 to 500 lines to the inch. As a general rule in this country about 250 lines to the inch are engraved, and our Manchester engravers are very successful in this particular pattern. The grooves run either parallel to weft or warp, are at an angle to them. It is found in practice that the best results are obtained, on such fabrics as sateens, with an angle of about 20 degrees to the weft, the angle inclining in the direction of the twist in the yarn. Sateens and twills are the class of fabrics that are chiefly finished in this way, but plain woven calico goods may also be schreinered with advantage. The peculiarity of the finish consists in the silky appearance that is produced on the goods. This is due to the reflection of light from the many small ribs embossed on the cloth by the engraved bowl."

Paper Lined Burlap.

Editor Textile World Record:

We are having trouble with the paper lined burlap we are making and find that the paste put on the back sometimes comes through to the other side. The paste we are using is made of common flour and glue. This is put on the cloth and then the paper is run on to it. If possible, we would be glad to have a rough sketch of a machine for backing colored burlap.

Brown (618).

I would suggest that Brown might find enlightenment from a study of methods of working of rubber mackintosh machines. In double cloth the rubber is laid on one fabric only and the other is pressed down on it in a way similar to that necessary in this case. As for the feeding of paste to the cloth, perhaps the hydrostatic feed used on machines for gumming and varnishing paper might convey suggestions. It seems to me that flour paste is a wrong thing to use. Dextrine would be better, although that is also penetrative in its nature. A good paste to experiment with would be starch treated with caustic soda to burst the granules and neutralized with H_2SO_4. Probably better still would be the mucilage called "Gloy," which is very sticky without being very wet. A. Wilme Collier, 124 Shepherdess Walk, London, N., is the English agent. No doubt this mucilage can be bought in bulk in America, and certainly there are many adhesives open to less objections than flour paste.

Lang Bridge Paradise Works, Accrington, England, make a machine for pasting paper on the back of canvas, and if Brown will give them particulars of the width of the canvas that has to pass through the machine, they will be pleased to quote prices and send samples of the work done on it.

James Strand.

Horse Blankets.

Editor Textile World Record:

We are making cotton warp horse blankets. The filling measures 55 yards to the ounce, the weight of the blanket being regulated by the picks per inch. The orders give the size in inches and the weight in pounds, thus:

500 blankets 84 inches long, 76 inches wide, 4 1/2 pounds.

I would like to know how to calculate quickly and accurately the number of picks required to give the required weight. We have but a few different cotton warps, that for the 4 1/2-pound blanket being 1800 ends 8s cotton. The blankets are finished dry, stretch 5 per cent. and lose about 3 per cent. in finishing. A blanket 76 inches wide is woven 84 inches wide in the loom.

E. Venzo (616).

Estimating the warp take-up in weaving at 4 per cent. the number of picks per inch is found as follows:

72 (ozs. in 4 1/2 lbs.) ÷ 2 1/3 (yds. in 84 in.) = 30.9 ozs. per running finished yard.
30.9 (ozs.) × 1.05 (100% + 5 % stretch) = 32.44.
32.44 ÷ .97 (100% — 3 % loss) = 33.4 ozs. per running woven yard.
1800 (ends) ÷ .96 (100 % — 4% take-up) = 1896 yds. warp.
1896 (yds. warp) ÷ 420 (yds. 8s per oz.) = 4.5 ozs. cotton warp per yd.
33.4 (ozs.) — 4.5 (ozs.) = 28.9 ozs. filling per yd.
28.9 (ozs.) × 55 (yds. filling per oz.) = 1590 yds. filling per yd.
1590 ÷ 84 (in. wide) = 19 picks.

In this case we would advise making the lay-out 22 picks and then watching the weights and correcting any irregularity by reducing the number. This will prevent the first blankets from being too light.

Bluing Bleached Yarns.

Editor Textile World Record:

Which gives the better results in bluing bleached yarns, ultramine or methylene blue?

Bruce (593).

The results obtained in bleaching depend largely upon the bleacher. Some bleachers use methyl blue and a little methyl violet; many get very good results with the aniline blues; others use secret preparations, and still others use no blue whatever, believing that the best results are obtained by keeping the bleach a pure white. I get the best results with aniline blue, sold as cotton blue, Nicholson's blue and under other names.

Bleacher.

Mixed Yarn Dyeing.

Editor Textile World Record:

We notice an article in your January issue on the dyeing of wool, cotton and silk combined. We propose making a yarn composed of these three materials in about equal quantities, and would like to know some firm of dyers that can dye yarn of this kind in bright colors, such as royal, scarlet, dark green and navy.

Bryant (624).

If any of our readers do this sort of work, we shall be pleased to put them in communication with the inquirer.

Carbonizing.

Editor Textile World Record:

Is acid sulphate of soda ever used in place of sulphuric acid for carbonizing wool?

Itasca (636).

Acid sulphate (or bisulphate) of soda is not employed for carbonizing wool; the commonest, and perhaps most generally satisfactory agents used are sulphuric acid, and hydrochloric acid gas, generated from salt and sulphuric acid. In Germany, magnesium chloride is used with good results.

There is no doubt that bisulphate of soda can be used, but there is always a tendency for soda spots to show wherever such chemicals are employed.

Beta-Naphthol.

Finishing Cotton Goods.

Editor Textile World Record:

Which side of the goods gets the water in dampening and how much water is used?

Sherburne (630).

For nearly all back filled goods, that is, goods that are starched on one side only, and for goods that have a specially heavy filling, the face side should be dampened; if the back is dampened, the goods have a tendency to harden, and the starch will pull out on the calender. Twills, drills, fancies, sateens and prints are usually dampened on the back, as it helps to raise the twill and figures. If a stiff finish is required, dampen them once on each side. For lawns, mulls, nainsooks, jeans, dhooties, handkerchiefs and cambrics, the goods are dampened on what is to be the face side, if a bright finish is required. Dyed cotton goods that require chasing, beetling or embossing are usually dampened once on each side as the finish requires.

The amount of water used in the dampener depends on the kind of machine used. Some are supplied with valves, others with brushes or sprayers. It is almost impossible to tell the amount of water required for a certain class of goods. I have sometimes found it necessary to open the sluices three inches wider for one batch of goods than for another of the same construction and finish. Only experience can determine the right amount.

Horace Kenyon.

Silk Shoe Lacing.

Editor Textile World Record:

Enclosed is a sample of so-called silk shoe lacing. What kind of yarn is this made from? You will notice it appears to be partially incombustible.

Beaver (628).

The yarn from which this sample is made is a silk tram weighted. I have not made a careful analysis, but it appears to be about 30-ounce weighting. That is, 16 ounces of silk after being boiled off to 12 or 13 ounces, or whatever it comes to, would be weighted sufficiently to bring the weight up to 30 ounces. Some dyers make what they call an incombustible weighting, which is supposed to be a combination of iron and tin; possibly this sample is treated with that process.

Boxelder.

Coated Yarn.

Editor Textile World Record:

Can you give us any information regarding a process for winding woolen roving around a cotton thread during the spinning process of the former? We understand that such a process is in use in some mills in the United States.

Yucatan (614).

Such a coated yarn can be made in different ways. One method consists in running a cotton thread and woolen roving together on a twister. Another consists in running a cotton thread with a woolen roving on the condenser of a woolen card. The cotton thread is run between the rub rolls, which rub the roving around the cotton thread in the regular process of condensing, the coated thread being wound on the spools. This process gives good results and it is possible to obtain a very thin veneer of wool on the cotton thread. We are not aware, however, that the process has ever been a commercial success, as under the most favorable circumstances the woolen veneer is easily chafed, leaving the cotton core exposed.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 232 to 253. Also Buyers' Index.

KNIT GOODS SITUATION.

Considerable activity was shown in the knit underwear branch of the market for the month of January. Not that any great volume of business is being placed, but it is evident that a large number of buyers are still open for merchandise and the activity comes more from the shopping they are doing than from actual buying. They have placed some orders with salesmen on the road, but these have been considerably smaller than usual, and while it is known that they must purchase more goods for the season's needs, yet they seem to be holding off, as if expecting lower prices or concessions of some kind. Two or three of the larger important manufacturers are still looking for business, but it is not believed that they will be able to make any material concession because of the strong position held by raw materials. The majority of manufacturers claim to be well covered on yarns, yet some few have held off, looking for a decline, and while these are the ones now looking for business, they must operate on the present yarn markets, and as a consequence, any lower prices are not probable.

Men's fleeces are still held at $3.62 1/2 to $3.75 for standard 13 to 13 1/2-pound goods and several lines are sold up.

Some of the more progressive manufacturers have this season endeavored to make a better margin on fleeced goods by getting out novelties, and the attention of the writer was called to a garment made by the Oneita Knitting Co. of a mock ribbed fabric with brown satin binding trimmed similar to a well known standard wool fleeced garment that is retailed for $1.00. Their price is $3.87 1/2 and we understand that it has proven a big seller among the jobbers.

One feature of the men's fleeced goods business this season is the early date of delivery that buyers are specifying. This has the advantage to the manufacturer in enabling him to get his money earlier than usual and saving storage and interest charges. This has been the custom of a few large Western jobbers heretofore, but this season several more have fallen in line, probably having in mind the great scarcity that has existed in this class of goods this last season. It is estimated by some that the market was short at least 10,000 cases of men's fleeced goods, and as several manufacturers have discontinued making this class of merchandise and no abatement is seen in the demand for a fleeced shirt by the consumer, it looks as though the coming season would witness a great scarcity.

Men's ribbed goods continue in popularity and salesmen now out soliciting fall business state that retailers are placing larger orders than usual on ribbed goods to sell at 50 cents, $1.00 and $1.50. The Cooper Mfg. Co. sold up their production of men's ribbed shirts, drawers and combination suits for fall delivery almost without effort, and in fact, were obliged to decline a large amount of business.

Ladies' ribbed goods to retail at 50 cents have been taken largely in both the fine and tuck stitches. Nothing particularly new is being shown in the way of trimming in this class of goods, and, indeed, this is not necessary, for it has been possible for some manufacturers to sell up their production without even making up new samples.

HOSIERY.

During the last month a great many buyers have been in the market, and while there has not been any large volume of new business placed, yet buyers have been busy confirming orders placed at home and in placing some duplicates, and it may now be said that the entire early business on fall lines has been completed and is fairly satisfactory. Buyers are apparently satisfied with the present range of prices and most of them are protected with merchandise for a good part of

the season's needs, and the majority of manufacturers are so well sold up as to appear indifferent to additional business.

The only element of weakness in the market is on men's low priced half hose and in instances where buyers have not appeared anxious some few manufacturers have shown their willingness for business by offering 84-needle bundle goods, weighing 2 pounds at 55 cents, and 144-needle black goods, weighing 1 pound, 2 ounces at 57 1/2 cents and 176-needle black, the same weight at 60 cents. These quotations, however, should not be taken as a criterion of the general situation of the market, but only go to prove that no matter how well conditioned the market may be, there is almost always some one who is willing to make concessions to procure business on lines that are not leading ones and that lack standing in the market.

Salesmen are now out soliciting retail trade and reports thus far received are encouraging. The unseasonable weather has not had so bad an effect as anticipated by some and in fact, orders have come in so freely from some quarters that jobbers have placed additional orders with their manufacturers, particularly where the business has been done on the more reputable leading lines.

Wool, worsted and cashmere goods are in the main well sold up, as are also all leading lines of ladies' hem top goods, and it would be a difficult matter to place orders on any of these lines.

As the season advances the more desirable numbers of spring goods become apparent and it is noticed that certain patterns and colors are gaining in strength, and vertical striped embroidered half hose and lace striped half hose with small embroidered figures are selling well.

White hosiery for ladies and children is increasing in popularity and each week shows a greater demand for plain colored goods to match the popular dress goods shades.

SWEATERS AND BLOUSES.

A fair volume of business has been booked on some well established lines of sweaters and blouses and a few report as many orders as up to this time last year, but many manufacturers in this class of merchandise have had poor success so far, largely due to unseasonable weather. The lower and more popular priced goods have suffered more severely and it is evident that the price and style are not the only factors accounting for this.

The prevailing styles of ladies' garments are not favorable to such a large use of these goods and the fact that the low grades were so unsatisfactory last season has also had the effect of curtailing the demand this year.

Men's and boy's sweaters have also lost some of their popularity and in their stead buyers are taking overshirts made of domet and cheap flannels. We think, however, that this situation would be much improved if manufacturers would discourage the lower end of the business and improve the style and quality of their goods and ask proportionately better prices.

CHEMNITZ REPORT.

The shipping season is now at its height and every week carloads of hosiery are leaving for Hamburg and Bremen.

As a great many more goods are coming in from the machines than in former seasons, the finishing room cannot make up the goods as fast as they are delivered and help is wanted in all of them, but only very few extra hands are found. Overtime is worked as far as the law will allow it, however. While large quantities of lace hose are shipped every week, a great many buyers will not get what they expected to receive before the end of the year, as many goods are still on back orders that have been due since August and September, and which makers cannot even procure today. As nearly all importers have bought very heavily, they will not have as much trouble as in former seasons, for the reason that they will be able to substitute similar numbers for those that are not shipped on time.

The delays on embroidered hosiery are plentiful, as far more of these goods were sold than can be turned out by the limited amount of help that can be procured. The low priced designs as a rule come last, as the embroidery people would rather make the higher priced patterns that pay better, and leave the others as long as they have plenty of work on the better class of goods.

In fine gauge ladies' hose the shipments are coming comparatively prompt, considering the enormous quantities that have been sold of these goods.

For next fall heavy cotton goods will be used more than in former seasons and very good orders have been placed for such.

Trade in fleeced hose is rather small compared with what it has been and is only on the better goods, as in low priced articles the domestic goods show better value, owing to the high rate of duty on imported goods.

Men's lace half hose are sold up for the season and brought better prices than were paid last summer, at which time there was hardly any call at all for this class of goods.

Infant's lace socks are also selling very well and in these nothing can be had for delivery on short notice.

In gloves the business is far better than it has been for many years and only in cashmere gloves trade is not as it might be. The reason for this is, that cashmerettes and imitation suedes are made in such a perfect way that they take the place of cashmeres, and besides these can be sold at a much lower figure on account of the lower duty. Suede gloves are more popular than they have ever been and are bought with suede lining as well as with fancy silk linings, which are shown in a great variety of novel and attractive patterns at popular prices.

The market on knit gloves is filling up fast and prices on these have been advancing right along, owing to the high prices of wool, as well as to the advance in wages, which have gone up considerably compared with those paid last year.

The mercerized cotton knit gloves and especially those made from ramie, have become very good sellers, as they look a great deal like silk goods and have the same soft touch and silky appearance; while they cost about the same as woolen goods, they can be sold at far less, as they pay a much lower rate of duty. They were brought out as a novelty this season and have proved a big success.

Trade in ribbed vests is not as good as it might be, which is probably due to the fact that several importers bought too heavily last year and have a good part of those goods carried over.

Buyers are not in town at the present time, but those from the large houses will soon be here to place their orders for next spring.

THE "LOCK BACK SHANK" KNITTING NEEDLE.

An important improvement in knitting needles has been made and patented by the Dodge Needle Co., Manchester, N. H. Its object is to prevent the displacement of the bent-over part of the needle, which causes the needle to bind in the slot, and, as every knitter knows, results in much loss from broken needles, damaged goods and reduced production. The improvement that overcomes this difficulty is exceedingly simple and effective, like most important inventions, and at once prompts the question, Why was it not thought of long ago?

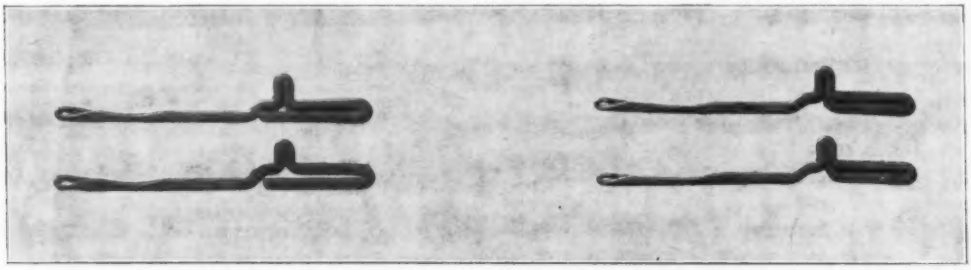

FIG. 1. OLD STYLE.

FIG. 2. LOCK BACK SHANK.

Fig. 1 shows two old style needles made for the Scott & Williams machine. They show plainly the difference in the back shank, the loose end on one being much lower than on the other. The end being loose, is easily bent sideways, causing the needle to stick in

the machine, and then the opening between the upper and lower fold gathers lint and dirt.

Fig. 2 shows two of the improved needles called the "Lock Back Shank," made for the Scott & Williams machine. The end of the wire, instead of being left loose, is fastened firmly in the butt of the needle, making the finished needle one compact piece, increasing

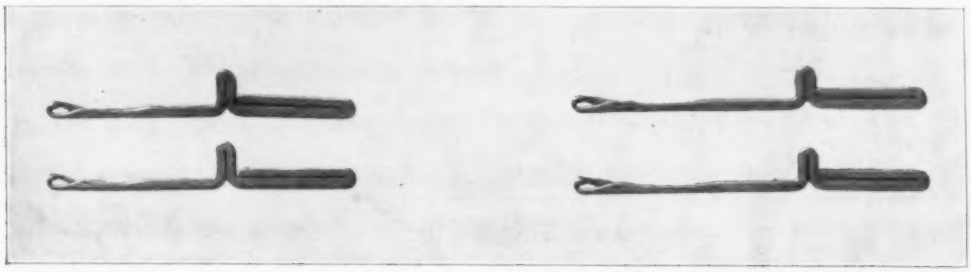

FIG. 3. OLD STYLE.

FIG. 4. LOCK BACK SHANK.

its strength and preventing the end from being sprung either sideways or vertically. The simplicity of the new construction and

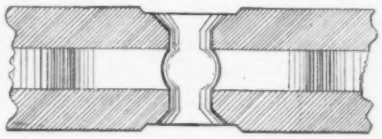

FIG. 5. SUNKEN HEAD RIVET.

its advantages over the old one are obvious from the illustrations.

Fig. 3 shows two old style needles made for the Nye & Tredick machine. The cam will

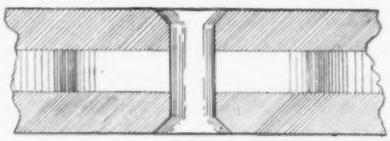

FIG. 6. OLD STYLE FLUSH HEAD RIVET.

often catch on the lower end of the shank, bending it and carrying it between the cams and the dial.

Two needles with the lock back shank for the same machine are shown at Fig. 4. The variation of the loose ends in the old form can be plainly seen, while in the new needles these ends are locked in place to stay.

This needle was quickly adopted by knitters and is now being used in many mills with highly satisfactory results, which lead the manufacturers to believe that the day of the loose end latch needle is passing.

A few years ago the Dodge Needle Co. patented an improved method of riveting their needles, which is shown at Fig. 5, and which gives excellent results. It consists of a sunken head rivet, which takes the head of the rivet out of the way of the fibres of the yarn, prevents tearing and roughing the surface of the goods, a difficulty that is inherent in the flush head rivet, shown at Fig. 6. The

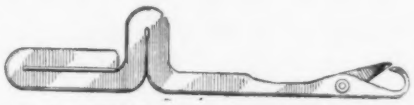

FIG. 7. NEEDLE WITH SUNKEN HEAD RIVET.

heavy pressure put on the head swells the rivet, making it much tighter in the hole and increasing greatly the durability of the needle which is shown at Fig. 7.

These two improvements, the lock back shank and the sunken head rivet, are believed by the Dodge Needle Co. to make their latch needles second to none, and knitters are invited to investigate their merits.

System in Knitting Mills.

Editor Textile World Record:

What is the best method of keeping track of the work in a knitting mill where the bundles have to pass through a number of different departments? Pittsburg (633).

This question is answered by an article on another page of this issue.

Production and Efficiency of Knitting Machines.

With all these varied conditions in knitting machines is it possible to formulate a production table for the different gauges, sizes of yarn, and number of needles covered by one yard of yarn? I should like to hear from other correspondents on these points.—F. W. Herington.
"Information Wanted," Textile World Record.

BY ERNEST TOMPKINS.

Chart No. 1 is submitted as a partial answer. This chart gives the constants, which, divided by the cotton number of the yarn gives the production of the knitting machine on flat work for needle velocity from zero up to 419 feet per minute, and numbers of feeds from 1 up to 10. Suppose the needle velocity is 314 feet per minute, which would be the velocity in a 20-inch cylinder running at 60 R. M. P., and that there are six feeds. By the chart the constant for these conditions is 1150. This is obtained by reading the number of the intersection of line No. 60 on the left of the chart, which gives the R. M. P. with the inclined line number 6, which is the line for six feeds. If the yarn used in No. 20, divide 1150 by 20 and the result is 57 1/2, which is the theoretical production for ten hours actual running time under the conditions given.

A table of constants that will cover the range of the chart may be made by tabulating the intersections of the horizontal lines with the inclined lines. The production under any condition would be obtained by dividing the constant for the given speed and number of feeds by the number of the yarn used, consequently the chart is in reality a table of the kind called for, but it has the advantage of being readily derived. It covers the usual ranges of production.

The objection may be raised that the production is not given as such, but has to be obtained by division. This objection will be met by another chart, but before introducing it chart No. 1 will be discussed. The advisability of presenting chart No. 1 before discussing its pros and cons may be questioned, but it has been done in order to make the principle of the chart prominent. If it were prefaced by a technical discussion but few of the readers of this magazine would get as far as the chart, because they are interested mostly in results rather than in the methods of obtaining them. It is probable, therefore, that many will stop their reading when they get thus far and leave the remainder of this article to those who are interested in technicalities. It should be remembered, however, that chart No. 1 is not given as a complete answer to the production question, but that chart No. 2 is needed to complete the answer. However, from the logical standpoint it is best to get through with chart No. 1 before chart No. 2 is taken up.

A technical question "What about the gauge?" will be raised at once because it is obvious that no variations for different gauges are provided in the chart. The answer is, that the gauge is eliminated from the question by the fact that with the usual stitch an equal length of yarn takes up approximately an equal length on the needles regardless of the gauge. This length on the needles is about 4 7/10 inches for one foot of yarn. There are, of course, exceptional conditions which make this length in the needles vary, but as an average rule it will be found as close as the related conditions, such as the observed needle speed, or the nominal count of the yarn. However, for those who wish to work closer the results obtained by using the chart may be reduced according to the stitch that they are using. For instance, suppose that the stitch is such that one foot of yarn occupies 4 9/10 inches on the needles, then less yarn would be used and less production would be obtained, and the difference would be in the proportion of 4 7/10 to 4 9/10. To illustrate, take the production that was obtained above with a 20-inch cylinder having six feeds and running 60 R. M. P. with No. 20 yarn. This production was 57 1/2 pounds. Multiply that by 4 7/10 and divide by 4 9/10. The result is 55 pounds.

If the stitch that is given in the table, that is 4 7/10 inches on the needles, is not

close enough, let anyone interested derive his own table by calculating the number of hanks of yarn used by the machine in a day, and then lay out the inclined lines accordingly. This will give a chart just like No. 1, but according to the particular stitch used.

The constants in chart No. 1 are actually the number of hanks (840-yard pieces) of yarn used per day. This will be apparent if one considers that with No. 1 yarn the constant would be the production. Take the illustration that has been used. The constant

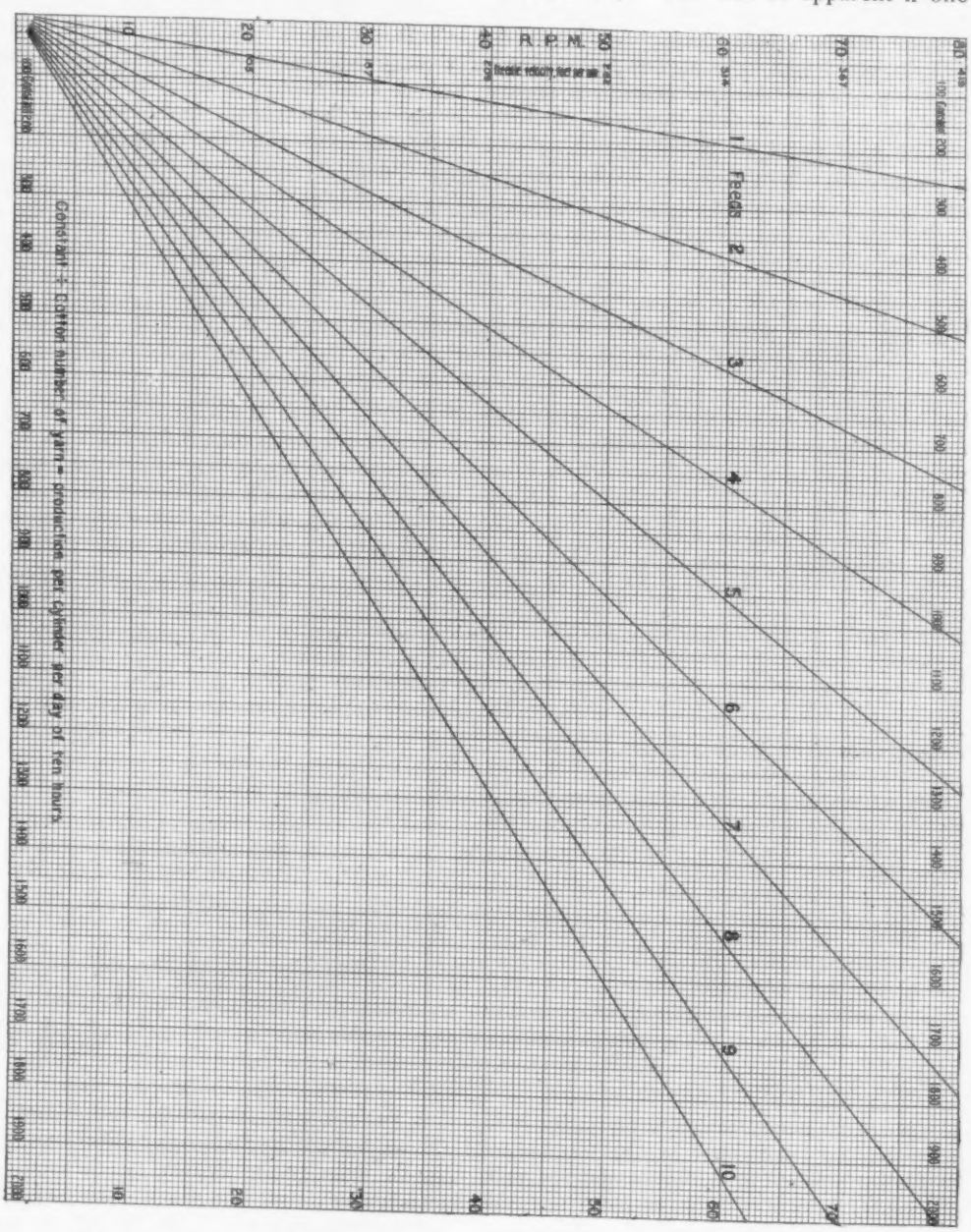

CHART NO. 1.

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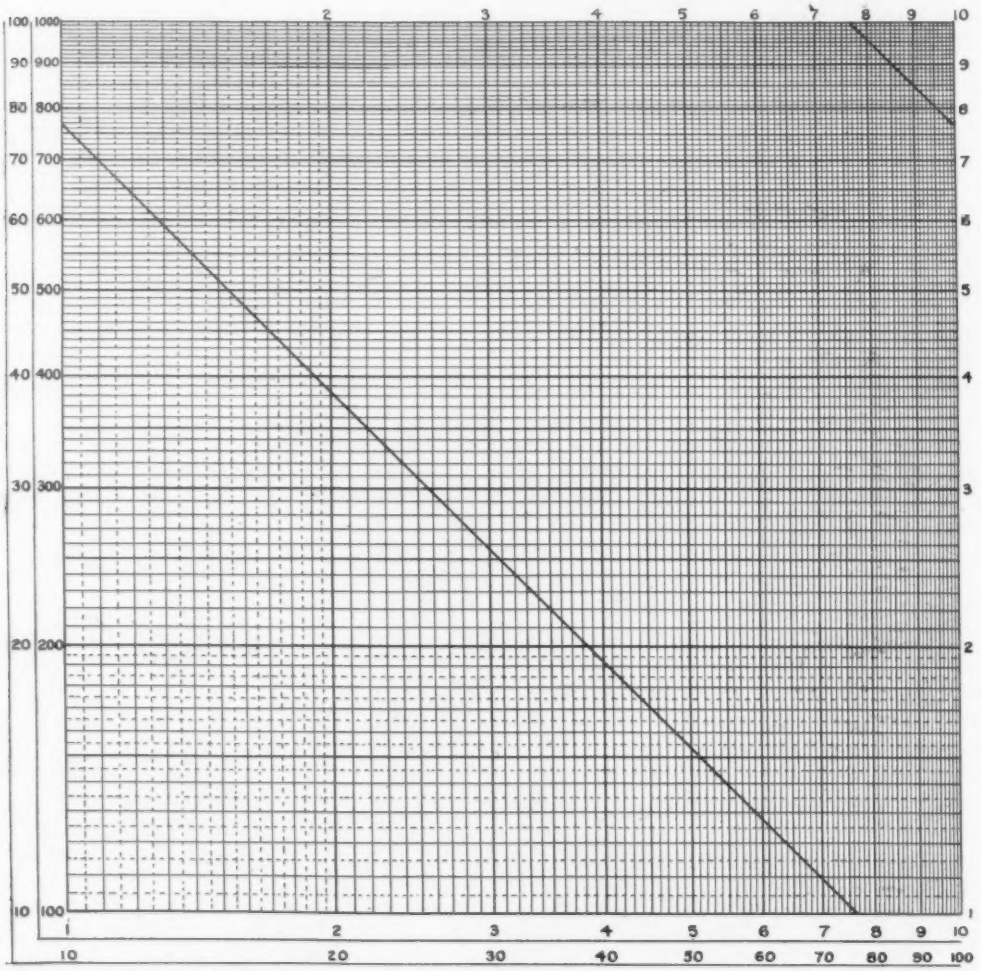
obtained was 1150. Now suppose that the yarn had been No. 1. Dividing 1150 by 1 gives as result 1150, which according to the rule is the production. But one hank of No. 1 yarn weighs a pound, therefore the constant is the number of hanks that have been knit. With No. 20 yarn there are twenty hanks to the pound and, therefore, the constant has to be divided by the number of hanks in a pound in order to get the production in pounds. Those who do not care to go to the trouble of making a chart may modify the one given by adding as many horizontal scales as may be required. For instance, a stitch taking 5 per cent. more needles would reduce the production in the ratio of 100 to 105. The corresponding constant (or hank) scale would start from zero on the left of the chart, but would have number 1000 directly under number 1050 of the present scale, and other numbers in the same proportion.



Copyright, 1906, by Tompkins Bros. Co. CHART NO. 2.

Up to this time it has been considered that the count of the yarn, the stitch, and the needle velocity are known, but it should be remembered that in practice none of these are known exactly. It is difficult to count the stitch nearer than two or three per cent., or to obtain the needle velocity any closer, and commercial yarn often varies five per

cent. from the count. Of course, it is true that with any one cylinder and one lot of yarn quite close measurements may be made, but during the course of a day in an ordinary mill the velocity may be changed by variation in the speed of the main shaft, or by variation in the belt slip due to atmospheric conditions, or other conditions, and each new batch of yarn is likely to vary from the count. Also in time the stitch will change gradually owing to the wear of the sinker blades and the needles.

This question of the reliability of the measurements is one that would admit of more discussion than is proper in this article. For instance, measuring the length that one foot of yarn takes in the needles is an operation that requires care and judgment, and a description of the different methods would make an article in itself. One difficulty encountered is that the measured length of yarn is generally run into the machine by hand power and the needle velocity is, consequently, different than under actual operating conditions. The higher the needle velocity is the less yarn will the machine take because with increased speed the tension on the yarn increases and this in turn increases the bending of the needles away from the sinker, thus shortening the stitch and decreasing the production.

Objection may be made that chart No. 1 is not absolutely accurate. The answer involves two considerations, namely, the chart as such and the numbering. In regard to the chart, of course no chart is absolutely accurate. The inaccuracy may be decreased by increasing the size, but it cannot be eliminated entirely. As to the numbering of this particular chart, it was made for practical use, and although it may and probably does vary slightly from the correct values, still the combined error of the numbering and the chart is proportionately much less than the errors that the user of the chart will make in measuring the speed, stitch and yarn count.

Taking it for granted that chart No. 1 gives or may be modified to give the number of hanks per day for all ordinary ranges of needle velocity, length of stitch, and number of feeds, it remains to show the production in pounds for an ordinary range of yarn sizes. This is done for a given number of hanks per day with chart No. 2. A similar chart for each different number of hanks is required to cover the entire range of production, but inasmuch as no calculation, but merely the Durand logarithmic cross section paper and a couple of lines on it are required, the making of the series is an easy matter. In practice an ordinary mill could cover its range with a half dozen charts like No. 2, as in any one mill the variation in speed, stitch and number of feeds per cylinder is not usually large.

Chart No. 2 is for a 20-inch cylinder with four feeds and making 60 R. P. M. The constant for the location of the lines is taken from chart No. 1. To read chart No. 2 find the cotton number of the yarn in one of the bottom scales, follow the vertical line up to the inclined line, and then across to the left on the horizontal line to the number in the corresponding scale, which gives the production in pounds per day, flat work. The two sets of scales may be confusing at first, but they should not be if it is remembered to read the production in the scale corresponding to that of the yarn count. For instance, if the yarn count is from 1 to 10, which scale is nearest the chart, the production figures will be in the scale nearest the chart. And for yarn counts finer than 10, the scale for which is farthest from the chart, the production figures are in the production scale farthest from the chart.

Production for multiple thread work is obtained either by adding the production for the different yarns used, or by taking the production of an equivalent single yarn. Backing cloth production is obtained by increasing the production obtained for single or multiple thread flat work, as the case may be, by the proportion of backing to face. For instance, ordinary fleece underwear is about 50 per cent. backing. That is, the backing is 100 per cent. of the face. Therefore, double the face production figure to get the total production figure. The efficiency of the knitting machine may be obtained by taking the actual production for ten hours and dividing it by the theoretical production given on the chart.

Then the question arises if the efficiency is high enough. The person answering this question should have had practical experience in cases involving the following details: Kind of work; kind, staple, and count of yarn; make of machine; condition of same; number of feeds, gauge, stitch, and quality of needles; skill of operatives; number of cylinders tended by each; and whether paid by the day or by the hundred pounds of cloth knit. In addition to these things, the arrangement of the machines in the knitting room and its lighting, heating and humidifying have to do with the efficiency.

The use of the charts is illustrated as follows:

Chart No. 1, Flat Work.

Ex. Needle velocity 209 per minute (40 r.p.m. of 20-inch cylinder); feeds 8; yarn 16s; 1020 (intersection 8 feeds with 40 r.p.m.)÷16 (yarn No.)=64 lbs. production.

Chart No. 2.

Note the conditions for which Chart No. 2 applies, namely, 10 hours, 4 feeds, 314 feet needle velocity per minute, and stitch of 4.7 inches of needles to 1 inch of yarn. (Other lines or other charts may be used for other combinations of conditions.)

Flat Work.

Ex. No. 6 yarn. Read the production, 127 lbs.

No. 9 yarn. Read the Production, 84 lbs.

(Care must be taken in pointing off here as the scale changes between No. 7 and No. 8.)

No. 15. Read the production, 51 lbs.

Two-Thread Work.

Ex. Yarn No. 10 and No. 14.

No. 10. Read the production, 76.5 lbs.

No. 14. Read the production, 55 lbs.

131.5 lbs.

Or, use the equivalent, No. 5.83. Read the production, 131 lbs.

Fleece.

Ex. Yarn,—face No 22; binder No. 30; backing 50% of whole.

No. 22. Read the production, 35 lbs.

No. 30. Read the production, 25.6 lbs.

6.06 lbs.

Backing is 5% of whole (60.6 x 2=) 121.2 lbs.

It seems to me that the length of the yarn per revolution is the best method. I think the tables should give the length of stitch by which the length of the yarn per revolution is calculated, as the stitch is an important factor in determining the production of knitting machines. Your table gives the length of the yarn per revolution on certain sized cylinders, using certain sized yarn. In mills using yarn and cylinders of these same sizes the lengths will vary according to the weight of the goods being knit. The weight of the goods is governed to a certain extent by the stitch, and the shorter this is the heavier the cloth and the less the production.

In regulating the stitch for weight a good many knitters count the needles covered by one foot of yarn, and a difference of two needles to a foot of yarn for each feed would make quite a difference in the length of the yarn per revolution and would amount to a large item on the production of 100 hours.

BY ESEK EASTON.

The first suggestion received is all right as far as it goes, but I do not think it is just what the manufacturer really wants. Of course the indicator attached to each machine would determine the efficiency of the knitting machine, but would not give the production, and this method would not help the manufacturer who wanted to know if the production of his knitting room, 750 pounds a day, was a good or only a fair production.

Of course this plan would show, from the loss in revolutions from any cause, the percentage of efficiency in reference to the revolutions of the machine, and would give only the theoretical production in revolutions, not in pounds of knitted cloth; nor would it determine the true and correct efficiency, because the length of the stitch or the yards of yarn per revolution is the prime factor in both theoretical and actual production.

For example, we will take two machines equipped with the indicator to register the actual number of revolutions the machines make. The number of revolutions it would make if run for ten hours without stopping is of course easily figured. These two machines are running at the same speed, have

the same diameter of cylinder, the same gauge, the same number of feeds, and the same size of yarn, but one machine is set at a long stitch and the other at a short one, and which for this example, if computed on the number of yards per revolution, we will say, is five yards per revolution for one machine and four yards per revolution for the other. At the end of the day the two machines register the same number of revolutions, but it would be found that the machine with the long stitch had produced more pounds of cloth than the other.

Could it be said that one of these machines was more efficient than the other? Instead it should be said that this method does not give the true efficiency because it is not based on the prime factor, which has to do more or less with the production of a knitting machine and must be considered in determining the efficiency.

To attach indicators to all their knitting machines would be an expensive proceeding to some manufacturers, whereas the other method would entail no expense whatever, except the cost of the book of tables. Of course if indicators are attached they can be put out of action and so not register when the machines are empty, but in my opinion the indicator would not answer all the questions a manufacturer wants to know about the production of his knitting room.

BY N. O. CONSTANT.

It seems to me that no constant could be arbitrarily taken for the production of circular machines on half hose.

The speed of the main shaft being the same a half hose machine would have the same production, that is, it would knit a single stocking in exactly the same time on the same machine, no matter what the count of yarn. As the machine is set by pattern wheel or chain in a positive relation to the speed of the main shaft, a stocking is produced in just so many revolutions, regardless of the size of yarn. The weight and texture of the stocking will vary according to the size of the yarn used, the tension and the length of stitch.

The difference between the actual and the theoretical production of half hose machines is due wholly to the "constant" controlled by the operator herself, that is, to her constant care. The time consumed by her in transferring the cuff on to the needles of the machine, her deftness in doing this and her ability to keep the machine running the greatest number of minutes, govern the actual production and our attempts to obtain a theoretical production.

Everything else being equal, the machine making the greatest number of revolutions per minute is the one that has the greatest production of half hose. Quality of production is then controlled by size and texture of yarn used, length of stitch and speed.

I am sending you under separate cover two stockings knitted on the same machine, in identically the same seconds of time, one from two threads of 22s, the other from two threads of 60/2-ply. The theoretical production of each is the same, so far as the machine is concerned, but I think you can easily determine which would have the greater actual production, and no mathematical constant could influence either.

Our production being a specialty, no determined amount of production for the machine itself can be obtained, but by taking the particular style of goods being knitted in combination with the time consumed by the machine in knitting the particular stocking, and the average time taken for transferring, we do assume a theoretical production for the machine. The actual then depends on the skill of the operator.

Most circular half hose knitting machines are automatic in their changes and on completion of the stocking stop knitting. When it is computed in the problem that a day's knitting embraces from 72 to 144 stops and transfers to produce three dozen to six dozen (according to the style being knitted), it can readily be seen that the operator that stands at the machine when it stops, ready to doff, transfer and start the machine again, can make quite an appreciable gain in actual production over the one that permits the loss of even one-half minute at each change.

These conditions induce me to believe that no mathematical table or constant can be devised to determine the production of half

hose by dozens. Each manufacturer is governed by the style of machine used and the kind of goods being produced in conformity to his own particular ideas, and must determine for himself what actual production to insist on as a fair per cent. of the theoretical.

I have found from 10 per cent. to 20 per cent. difference in the running speed of the same make of machines, in conformity to the ideas of different hosiery manufacturers, some believing in high speed, short life and repairs, and others the contrary, thus making quite a difference in the theoretical production of the machine itself.

BY NATRONA.

In reply to your inquiry as to a system of calculating the efficiency of knitting machines, I would say that the Herington method is correct and I have no comment to make on the table as far as it goes, but I do not think that it clearly gives the efficiency of a machine in regard to finished product.

It is well known that two knitting machines of the same size and make, running at the same speed and stitch on the same number of yarn, will not always produce the same results, as either of the machines may produce more cloth than the other, and have a greater percentage of imperfections. In some yarns there is more or less moisture, which would make some difference in a run of ten hours, especially on latch needle machines, which do not roll the cloth up, as the cloth would dry out to some extent.

For recording the efficiency of knitting machines I use a blank form like that enclosed. I have taken a 20-inch machine of 24 gauge for the figures enclosed, with 20s cotton yarn at 30 stitches per inch, 75 r. p. m., which gives a needle speed of 392 feet 8 inches per minute. One foot of yarn covers 65 needles. The machine having 1,006 needles, the result would be 5.15 yards for one revolution of a 20-inch machine or a yarn speed of 386 3/4 yards per minute, per feed. This gives a theoretical production of 1.38 pounds per hour or 82.8 pounds per week of 60 hours, per feed. This speed is rather high for some work, yet I claim that the highest speed attainable is the maximum efficiency of a knitting machine, and the actual results on any kind of work must have its efficiency in per cent. figured from the standard maximum

Date	Machine No.	Gauge	Yarn No.	Stitch	Needle Speed	Yarn Speed yds. per min.	Lbs. per Hour per Feed	Lbs. per Week per Feed	Actual Production	Percentage of Efficiency	
		24	20	30	392' 8"	386 3/4	1.38	82.8	60.5	73%	

RECORD OF EFFICIENCY OF KNITTING MACHINES.

needle speed. In this case I take the needle speed of 392 feet 8 inches, upon which my caculation is based.

The blank form can be arranged to meet the demands and conditions of the knitter. Each machine should be numbered and the foreman should know at what speed each machine is running, the number of feeds, number of the yarn and length of stitch. Comparing the actual with the theoretical production shows the per cent. of efficiency of each machine, as far as the weight of the cloth is concerned. I don't think the knitter should stop here, for it is not the number of pounds of cloth that a machine will turn off that counts with the manufacturer in ascertaining the efficiency of his machine. It is rather the percentage of perfect goods he can get from a certain amount of yarn. For example, machine No. 1 may have an efficiency of 75 per cent., and machine No. 2 only 70 per cent., but it does not necessarily follow that machine No. 1 is producing the best results, as the number of imperfections in the cloth may be so great as to offset the difference of 5 per cent. in efficiency. To determine the real efficiency it is necessary to take into account the proportion of perfect goods, as well as the total weight. By referring to the table in my other article it will readily be seen how this is done.

I see no possible way to compile a table that will meet with the approval of knitters in general. The method I have described could be arranged by the knitter to suit the conditions under which he works, but the difference in the length of stitch would make such a material difference in the production that no table could cover all conditions. The difference of one stitch to an inch would make a difference of a number of pounds in the production of a week.

BY F. W. HERRINGTON.

In the January issue, Cumberland asks how the number of yards to one revolution is obtained. This was partly covered in my article on page 143.

Warren, in the same issue, states that the table is not suited for small cylinders of hosiery machines. As the smallest diameter of cylinder for hosiery is two inches or a trifle over six and a quarter inches circumference, and the table starts at three-eighths of a yard to one revolution, and Cumberland states that the general average is one foot or one-third of a yard of yarn to 4.7-inch of needles, then the smallest cylinder used for hosiery would contain nearly eighteen inches or half a yard of yarn to one revolution.

However, I think a table that would be generally used and therefore of value to knitters, must be one in which the knitter himself does not have to do any great amount of figuring to arrive at the theoretical production.

It is necessary for a knitter to have his machines set at a certain length of stitch, even with the particular size or number of yarn he may be using, in order to have the weight of the goods per dozen come out right; therefore the method for obtaining the yards per revolution gives him at the same time an accurate method for regulating the length of stitch to obtain the proper weight of the goods. For example, if he has set the machine to take four and a quarter yards per revolution, and he finds the goods coming out too heavy, then he lengthens the stitch so that it will take only four yards.

Knowing the yards per revolution of his machine and the revolutions per minute of the cylinder, by referring to the table under the size of yarn being used, will be found the theoretical production in pounds for one day of ten hours without any calculation. Of course a table can be based on the speed of the yarn, as this requires only that the yards per revolution be multiplied by the revolutions per minute, but a table compiled on this basis should also give the theoretical production for ten hours. The suggestion to obtain the speed by measuring a quantity of yarn on the bobbin and then noting how long it takes to knit it, I hardly think practicable as it would be considered too troublesome.

The length of yarn per revolution also gives a method to ascertain the percentage of backing to the face on fleece lined knitting as a yard of backing yarn would be measured off and the needles counted that are covered by it. We would then have the theoretical production of the face yarns and the theoretical production of the backing yarns separate-

ly and the percentage one bears to the other would give the proportion of backing yarn used in the goods.

BY F. J. C.

Your letter with table outlining a system for calculating the efficiency of knitting machines has been received and carefully examined, and from a practical standpoint I fail to see of what intrinsic value it can possibly be to a practical man, either as a reference table or for any other purpose. Theoretically it is a very creditable piece of work and that is all that I can conscientiously say in its favor. While I am a believer in system to a certain extent, I also believe that too much system is as bad as no system at all, and in this particular case I fail to see where a table worked out as outlined would be of any practical value to a manufacturer.

Care must be exercised in the use of yarn for either balling machines or warpers that is made into a heavy spool load, unless special care is taken to ensure ease of rotation at the creel. When a large number of heavy spools are used it requires a very appreciable pull to start them in rotation, and every possible means of lessening friction should be adopted.

KEEPING TRACK OF THE WORK IN A KNITTING MILL.

The discussion of methods for determining the efficiency of knitting machines leads me to give you an outline of my method of keeping track of the goods after they come from the knitting frame. I have found it the best of many that I have tried in the last fifteen years, as it is possible at any time to find the amount of cloth produced in a certain number of hours on any yarn, stitch or speed. It is also valuable as a guide to determine the proper speed of a knitting machine to give the best results of perfect goods produced.

Date	Machine No.	Size	Knitter No.	Hours Run	Yarn No.	Weight	Theoretical Weight	Percent. of Efficiency	Dozen Cut			Bad Cloth	Waste	Waste Per Doz.	Cutter No.	Remarks
									S	D	Slev.					

FIG. 1.

It is also an invaluable aid to the superintendent for finding the exact amount of yarn he is using to produce a dozen of goods at a certain weight per dozen. This is very important at the present time when dependence is placed upon a large production and a small margin of profit per dozen. A fraction of a pound of yarn put into or left out of a dozen of goods may mean a corresponding amount of profit or loss.

Fig. 1 is a blank for the record to be kept by the foreman cutter, in book form if possible, so that he may know that certain rolls of cloth will give a certain number of dozens before he delivers these rolls to a cutter; this

makes it easier for him, especially where there are different styles of goods cut from the same roll.

The ticket shown at Fig. 2, with fine wire inserted, may be attached to the end of a roll and will stand ordinary handling in a mill without becoming detached. If the goods

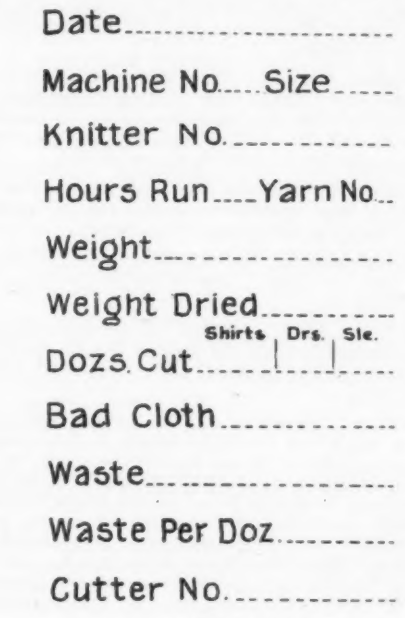


FIG. 2.

are dyed in the roll, the ticket may be detached and the machine number corresponding to the ticket can be marked on the goods in the usual way. When the dyeing operations are completed the tags corresponding to the machine number on the roll may be attached and sent to the cutter. When the roll has been cut the ticket can be copied into a book and an accurate record kept for each machine. NATRONA.

Circular Ribber and Footer.

In the January issue of the Textile World Record a hosiery machine was described, which is being introduced in the United States by the Grosser Knitting Machine Co., 260 West Broadway, New York. This machine, which automatically knits the rib top and changes to plain stitch, was described as the Grosser machine. The Grosser Co. has the American agency, but the machine is of English invention and known as the S. X. L. It is built by Wm. Speirs, of Leicester, England.

All the Grosser machines are of the flat type, while this is a circular machine.

KNITTING MILL NEWS.

New Mills.

*Massachusetts, Springfield. The Potter Knitting Company, capitalized at $75,000, will start operations about Feb. 1st making infants' and children's knit underwear. C. B. Potter is president and treasurer, also buyer for the company. This company will be located in the King Block, 216 Worthington St.

New Jersey, Newark. A small knitting plant has been started at 446 South 7th Street by Mrs. K. Mohn, manufacturing German hosiery, sweaters, etc., with 3 machines.

*New York, Broadalbin. Plans are being prepared by the Broadalbin Knitting Co. for the erection of their new mill, replacing one destroyed by fire and upon which work will be started about April 1st and completed about June 1st. They will install an equipment of 6 sets woolen cards, 1,800 cotton spindles, 30 knitting and 60 sewing machines, for making knit underwear. A dye house will also be attached to the plant. Goods will be sold direct and through Converse, Stanton & Co.

New York, Brooklyn. Sweaters and fancy knit goods are being turned out on 4 knitters and 1 sewing machine by S. Gilinsky, 59 Meserole St. He says he is busy.

New York, Brooklyn. Jacob Korz, at 912 Flushing Ave., is operating a plant manufacturing stockings, sweaters, jackets, etc., on 5 knitters and 1 sewing machine.

New York, Brooklyn. A. Brown is operating the U. S. Kniting Works, a small plant for the manufacture of sweaters and fancy knit goods, at 126 Boerum St. He is running 3 knitting and 1 sewing machine.

*New York, Brooklyn. Partial operations have begun in the new plant established at 408-10 Berry St. by Bryant & Gasteiger. This plant is equipped with 15 knitting machines, 10 sewing machines, 2 loopers and 2 spoolers, making Shaker sweaters, cardigan jackets and toques. Electricity is the motive power.

New York, Brooklyn. The Chester Knitting Works is a new knitting plant recently started up at 51 Osborn Street, by Aaron Meislin. All kinds of woolen and worsted sweaters are made. Plant is equipped with 3 knitting machines.

*New York, Clayville. Preparations are being made for starting up the mill by the Clayville Knitting Co. George Vosburgh will be superintendent of the plant.

New York, New York. H. Sobel has started up a small plant at 11 Pitt Street, manufacturing woolen and worsted sweaters and golf vests, with equipment of 3 knitting machines.

*New York, Oswego. A stock company has been organized by M. W. Brooks, formerly at Herkimer, for manufacturing the Brooks patent face protector and other knitted specialties. The plant is located in part of the Mohawk Mfg. Co.'s building and it is expected will be ready for active work in about two weeks.

*North Carolina, Drexel. Work will be started

about February 1st in the Drexel Hosiery Company's mill. An addition has been built to the plant, operated on ladies' plain and ribbed goods, men's half hose and children's ribbed hose. When additions are completed will have 50 knitting and 2 sewing machines. C. S. Berry is president of the company and P. E. Berry, treasurer. A dye house is also attached to the mill.

Pennsylvania, Honesdale. Operations will begin shortly in a new underwear mill of which M. J. Taub will be manager.

*Pennsylvania, Leesport. The new plant of the Eagle Knitting Mills, which have been running since before the holidays, will be in full operation Jan. 22d. This mill is operated on underwear only.

Pennsylvania, North Wales. The knitting plant to be started up in this town recently reported by us will manufacture ladies' 200 needle cotton hose, the equipment consisting of 10 knitters, 2 loopers and 1 sewing machine; using 17's Eastern mule spun yarns. The proprietor is William T. Tonner. The goods will be sold direct.

Pennsylvania, Philadelphia. About three months ago F. E. Munich started a knitting plant at York and Jasper Streets. He manufactures fine grade ladies' seamless hosiery, cotton and lisle, and is greatly encouraged at the success thus far. Mr. John J. Bresnan, a knitter of wide experience, is the superintendent.

Pennsylvania, Philadelphia. The Bull Dog Hosiery Co. operates a plant at Thompson and Lawrence Streets, with equipment of 200 ribbers. Company's main office and salesroom is located at 43 Leonard Street, from which place they are selling the product and report large orders on hand.

*Pennsylvania, Reading. Several months ago E. H. and A. C. Lance started up a knitting plant at Walnut and Thorn Sts. for the manufacture of fine cotton ribbed hose.

Pennsylvania, Reading. A new knitting company just starting up in this city is the Quality Knitting Mills Co., located at 15 South Front St. They will manufacture cotton hosiery.

*Pennsylvania, Topton. Operations have begun in O. C. Rohrbach's new underwear mill. Samuel Knouse is superintendent of the mill.

Pennsylvania, York. During the fore part of January a new knitting mill will be started up here by Samuel Buck & Son, the plant being located at Greene Street and College Avenue, the production to consist of ladies' fancy cotton hosiery.

Enlargements and Improvements.

Alabama, Gadsden. The Gadsden Manufacturing Company has been organized with capital stock of $15,000 and has taken over the Adams Knitting Mills. H. C. Moody is president of the company and C. B. Foreman, treasurer. The capacity of the plant will be increased.

Connecticut, New Haven. L. E. Whiting, proprietor of the Whitknit Mills, contemplates enlarging the plant for manufacturing ladies' seamless hose.

Connecticut, So. Manchester. Messrs. Cheney Bros. are extending their system of humidifiers, placing their order with the American Moistening Co., Boston, Mass.

*Michigan, Bay City. The World's Star Knitting Co. will start work about March 1st on erection of their new building, which they expect to have completed July 1st. This company manufactures hosiery and underwear.

Michigan, Detroit. The Western Robe Co. has completed erection of a new addition, 260 by 50 feet, three stories.

Michigan, Detroit. The Ypsilanti Underwear Company will transfer the knitting department of the Ypsilanti Mill to this place, owing to inability to secure sufficient help at Ypsilanti. More of the finishing will be done at the latter place.

Michigan, Port Huron. J. L. Fead and Son of Lexington have established a branch mill at this place. About 40 people are employed.

New Hampshire, Hillsboro Bridge. Work is under way installing a new boiler in the Contoocook Mills.

New York, Albany. A new four-story building is under construction for the Fuld & Hatch Knitting Co. They expect to have same completed about March 15th.

New York, Brooklyn. The Sumner Knitting Mills at 235 Ellery Street, of which A. Schlesinger is the proprietor, is fitting up their two-story brick building in the rear of that address with boilers and engines to enable them, in the future, to run the plant, consisting of 8 knitters, 12 sewing machines and 1 winder by power instead of hand as heretofore. Mr. Schlesinger states that he is now working on his samples for the coming season, which he expects to be a good one. He manufactures woolen and worsted sweaters.

New York, Elmira. The Elmira Knitting Mills have purchased another double railway head from the Saco and Pettee machine shops, Newton Upper Falls, Mass. These machines are giving most excellent results and the Saco and Pettee Co. are receiving many orders for them.

*New York, Oneida. The Oneida Hosiery Company has secured part of the Warner Industrial Building and has startel installing a portion of the plant in same, viz: the finishing and shipping departments. In the spring a new three-story brick building will be erected near the Central Railroad.

New York, Poughkeepsie. A new office building is being erected for the Lindenwald Mills, C. F. Hoag, proprietor. They are also adding about 20 cylinder and flat frame machines.

*New York, Utica. Contract has been awarded for the installation of the plumbing, heating, steam work and fine sprinkler system in the Avalon Knit Wear Co.'s new mill.

North Carolina, Fayetteville. The Algodon Knitting Mills Company has been incorporated with capital stock of $50,000, to continue the plant of the Algodon Knitting Mills, F. H. Cotton, proprietor. John C. Gorham is secretary and treas-

urer of the new company and Frank H. Cotton, president. The machinery equipment will be increased.

*Nova Scotia, Truro. The Truro Knitting Mills Co., Ltd.. are to build an extension to the mill and also erect a worsted mill for making yarns.

Ohio, Elyria. The Fay Stocking Company, makers of the "Fay" stocking for men, women and children, expects to soon install a bleaching plant.

*Pennsylvania, Ephrata. The Ephrata Hosiery Mill Co., recently incorporated with capital stock of $20,000, to continue operating the Ephrata Hosiery Mill, will install 40 new machines in the plant. This will give them a total of 75 machines making men's half hose. F. S. Weaver is president and treasurer of the company. The product is sold direct.

Pennsylvania, Hamburg. On account of the increased demand for the knit underwear manufactured by W. Scott Fisher & Son during the past year they have been compelled to materially increase their mechanical capacity and a further increase in this department they expect to make in the near future.

*Pennsylvania, Hamburg. S. D. Bauscher, proprietor of the Gotham Underwear Mills, is now located in his new quarters where he has considerable more room. During the early fall he installed a bleaching plant. Mr. C. Yeager is the superintendent and the production of the plant is women's underwear.

Pennsylvania, Hazleton. A larger engine (purchased) is to be installed in the Hazleton Knitting Mill.

Pennsylvania, Mifflintown. The E. Schott Estate, manufacturers of ladies', men's and infants' hosiery, will build an addition to the mill early this year and install 50 more 200 needle knitting machines.

Pennsylvania, Philadelphia. The American Knitting Mills, 121 North 4th St., of which David Block & Co. are the proprietors, report that they have taken over the entire equipment of the Goldblatt & Busch Knitting & Fur Co. located at 218-20 Walnut St., which is no longer in existence. This machinery, combined with that already in operation at the American Knitting Mills, will make 75 knitters, 28 sewing machines and 2 winders, one of the winders having been recently purchased from A. W. Allen. They are manufacturing wool and worsted ladies' golf vests, blouses, coats, sweaters and bathing suits, selling the goods direct.

Pennsylvania, Port Carbon. While in the business a little over a year Mr. H. L. Miller has met with very great success and he has more than doubled his capacity. Mr. Miller is, at the present time, negotiating for additional ground with a view of enlarging his building and to make further increases in his machinery. He manufactures women's cotton underwear.

*Pennsylvania, Reading. Mr. George G. Guenther has removed into his new building at 946 to 950 Court St. The building is four stories and basement which now gives him ample room for his increased business which is the manufacture of children's ribbed and ladies' hose. He has about doubled the capacity of the establishment.

*Pennsylvania, Reading. The Hawk Knitting Co. are now located in their new building at Front and Buttonwood Sts., which is three stories and basement, 50 by 111 feet, and which is fitted up with all the latest modern improvements for the manufacture of fine seamless hosiery.

Pennsylvania, Reading. S. S. Miller, Walnut and Thorn Sts., is very busy on his line of cotton half hose and has orders on hand to warrant him running full time until the first of May. Mr. Miller recently purchased the entire hosiery business of Miller & Balthaser, West Leesport, Pa., consisting of 53 machines which will be removed to Reading at once and put in operation. He is also looking for a site with the idea of erecting a three-story building in the near future.

Pennsylvania, Reading. Charles L. Oakes, formerly located at Spruce and Mifflin Sts., has removed to larger quarters at 240 Moss St. He is manufacturing cotton half hose.

Pennsylvania, Schuylkill Haven. Berger Bros. of the Star Knitting Mills manufacture an extensive line of cotton union suits. They have recently replaced their old finishing machinery by installing new and latest improved patterns of the Wheeler & Wilson and Union special sewing machines.

Pennsylvania, Schuylkill Haven. J. F. Bast, proprietor of the Royal Knitting Mills, has just added a new three-story brick addition to his mill 60 by 55 feet which give him additional room to transact his increasing business.

PERSONALS.

C. H. Whitcher, superintendent of the Peerless Union Underwear Co., Mattapan, Mass., has resigned.

Wm. Service, who has been employed for some years at the Wright Health Underwear Co.'s Mill that was recently burned at Pownal, Vt., has accepted a position in the mill of H. E. Bradford & Co., Bennington, Vt.

Edward Hewsom of Waterford has accepted the position left vacant by William Dufrense, formerly overseer of night carding at the Victor Knitting Mills.

John T. Bradley of Plainville, Conn., has accepted a position as engineer at the Riverside Ave. factory of the Bristol Mfg. Co., Bristol, Conn.

George Hanks, formerly with the Eureka Silk Co., Canton, Mass., has gone to Willimantic, Conn., to take a position in a silk mill.

George Sanderson, formerly of Troy, N. Y., has accepted a position as overseer at the new knitting mill at Taunton, Mass.

Martin Howard has been appointed superintendent of the Parker Hosiery Mill and Dye Works, Winchester, Va.

Pennsylvania, Philadelphia. Mr. Page, formerly foreman of the Vigilant Mills, operated by Wallace Wilson, is now connected with the New Ideal Hosiery Mills, of which he is part owner and superintendent. Mr. Page was not financially connected with the Vigilant Mills.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Knitting Machine. B. T. Steber, Utica, N. Y., has recently brought out an improved fleece lined underwear knitting machine. A company is now being formed to build this machine.

Knitting Machine Needle. The Dodge Needle Co., Manchester, N. H. An improved knitting machine needle described in another part of this issue.

Sky Light Ventilator. The Burt Mfg. Co. Akron, Ohio, have begun the manufacture of ventilators, which possess novel features and have been thoroughly tested with satisfactory results.

Warp Stop Motion. Harry J. Ricketson, Fall River, Mass., has invented and intends to place on the market a new warp stop motion, now running in the Merchants Mill.

Air Heater. The Green Fuel Economizer Co., New York City, has recently introduced a device for heating air to be used for drying and general heating purposes. A description appears in another part of this issue.

Automatic Sprinkler. George Mills, Globe Iron Works, Radcliffe, England, are about to introduce into this country the "Titan" automatic sprinkler, which is in extensive use in England and India and on the Continent of Europe. Attention is called to it in our advertising columns and in the Industrial Notes in this issue.

Yarn Polishing Machine. George Keighley, Burnley, England. An improved machine for brushing and polishing yarn in the skein.

Cloth Carbonizing Machine. Rudolph Jahr, Gera, Germany. A cloth carbonizing machine, described in another part of this issue.

Dryer Chain. Gebrueder Sulzer, Winterthur, Switzerland, have recently brought out an improved form of coupling for chains and dryer tenter machines. It is claimed to be certain in action and avoids all damage to selvages.

Sirocco Fan. The Sirocco Engineering Co., New York City, is introducing into this country the Sirocco fan, which is in wide use in Europe.

Card Clothing. Speed and Stephenson, Boston, Mass, are introducing to the American trade a line of improved card clothing of hardened and tempered steel wire, which is in extensive use in England and on the Continent.

Passementerie Loom. Oskar Schreiber, Zwickau, Saxony. An improved loom for the manufacture of passementerie, which is said to possess many advantages over the machines now in use.

Single Thread Tester. John Nesbit, Manchester, England, is introducing a yarn tester for testing the strength of yarn by single threads in order to overcome the well-known objections to making these tests with a number of threads.

Cloth Calender. Mather & Platt, Manchester, England. An improved seven-roll calender driven by electric motor. It comprises a number of new features that make its construction of special interest.

Piece Dyeing Machine. F. W. Buendgens, Aachen, Germany, has recently brought out a new piece dyeing machine provided with a special arrangement for cooling the liquor after the dyeing process is finished.

RESULTS WITH THE NASMITH COMBER.

A little over a year ago, in October, 1904, we published a technical description of the Nasmith comber, giving the names of a few English and Continental mills in which the machine was in successful operation. Since that time the history of the machine is a record of uninterrupted advance. It has been adopted by many of the best firms on both sides of the Atlantic, and has, in fact, sold itself into the cotton mills. At present there are eighty Nasmith combers in operation in the United States, turning out a production of about 13,000 pounds of combed cotton per day, which the American agent of the machine, Stephen C. Lowe, 186 Devonshire St., Boston, believes to be nearly double that of other combers on this class of work.

Of the eighty machines sold to the American trade but one has been rejected, and that for reasons that Mr. Lowe is ready to give to any one who desires to know. This rejected machine was immediately resold to one of the leading mills in New Bedford, where it can be seen in operation with five other Nasmith combers that have been installed since the purchase of this first one. This is a case where the stone that the builders rejected became the head of the corner.

In October, 1904, the advantages claimed for the Nasmith comber were summarized as follows:

(a) Without increase of speed, twice the production of a Heilmann comber can be obtained and the quality maintained. This means economy of floor space, power, help and repairs.

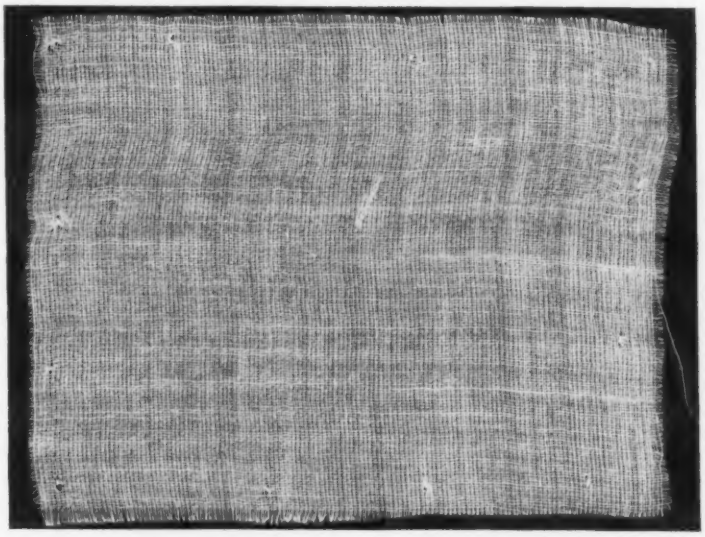
(b) It will deal with all lengths of stock from 7/8 to 2 inches, without abnormal waste on the shorter varieties.

(c) It makes a perfect piecing, even on the shortest stock, and the cloudy draw-box sliver is a thing of the past with this machine.

(d) The quantity of waste is easily controlled and if desired it will work with very low waste, even on short stock, for semi-combed yarns.

(e) All its motions, except those of the detaching rollers, are continuous, so that there is only one cam in the machine, which runs very quietly and with proportionately reduced wear and tear.

(f) Its mechanism and adjustment are much simpler than those of any other comber and it rarely requires resetting.



MADE FROM STOCK COMBED ON THE NASMITH COMBER.

(g) There is no leather covering required on the nipper, which, once set, cannot be made to touch the cylinder.

A year's experience with the Nasmith comber in some of the best mills in the country has confirmed these claims, and today Mr. Lowe makes the following offer to the trade: To prove these claims he will install a Nasmith comber in any combing plant without cost to the manufacturer, and if it is not fully satisfactory, will remove it.

The quality of work done by this machine is shown by the accompanying illustration of a fabric made in one of the mills where this comber is used, and which we have analyzed with the following results:

Warp.....73 threads 120s per inch.
Filling....65 threads 180s per inch.
Weight, 21 square yards per pound.

A sample of these goods can be seen at Mr. Lowe's office or at the office of this journal.

The success attained by the Nasmith comber in Europe is indicated by a list of the mills in which it has been installed, shown on pages 16 and 17 of this issue. Those familiar with the European cotton trade will see at once that the Nasmith comber is in operation in some of the best mills in England and on the Continent. The eighty machines in American mills are well distributed and one of the striking features of this year's trade in the Nasmith comber is the large number of mills that have repeated their orders.

We have briefly outlined the success of the Nasmith comber, which the builders and the American agent desire to bring to the attention of every cotton manufacturer in this country. Further information can be obtained upon application to Mr. Lowe, who is ready to deliver machines under a guarantee.

Carpets were originally used for covering tables, sideboards and cupboards. In 1577 the inventory attached to the will of Archbishop Parker included "one carpet of black velvet for the little bord, fringed with silver and gould, lyned with taffita." The practice of covering the floor with fabrics was at first looked upon as effeminate and a carpet knight was defined as "one that ever loves to be in women's chambers."

THE SIROCCO FANS AND BLOWING APPARATUS.

There is probably no class of apparatus of such wide and useful application as fans and blowers. Scarcely a branch of industry exists in which they are not employed, the duties they perform being manifold and covering such varied fields as ventilation, heating, cooling, drying, and the mechanical production of draft for boilers.

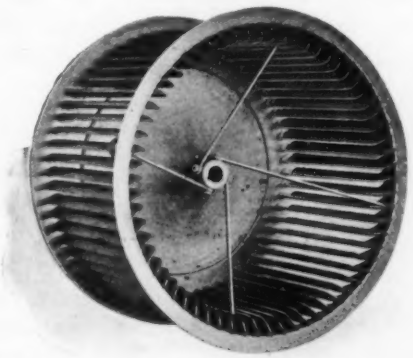
In the textile trade they are an important adjunct of equipment, not only for these general purposes, but also in connection with tentering machines, drying apparatus, removal of steam in dyeing houses, dust removal in hackling and carding rooms, and humidification systems, and for conveyance of loose textile materials.

The importance of proper ventilation in mills and factories is so generally recognized as to require no special comment, and the question for owners and engineers is simply what system will give the desired results under fluctuating conditions with greatest certainty, and at the same time, most economically.

With a fan system, provided it is properly designed for the conditions, the advantages of controllability and flexibility are secured in a high degree. The exact volume of air required for a given duty is capable of calculation, and this air, at a properly adjusted velocity, can be conveyed by ducts to and from any desired location.

The production of boiler draft by mechanical means is also an important field. With chimney draft, the user is practically limited to the employment of the particular quality of fuel which will give the desired rate of combustion with the fixed strength of draft due to the height of the chimney to which the boiler is connected, and if the chimney is inadequate for the maximum requirements of the boiler plant, it has outgrown its usefulness. With fan draft, whether forced or induced, the strength of the draft can be suited to the fuel, and is completely under control, subject to ready increase or decrease at a moment's notice in accordance with fluctuating requirements. The draft is uniform, and independent of atmospheric conditions, and

full advantage can be taken of economizers and super-heaters as reduction in temperature of the gases by utilization of their heat in this manner may be carried out to any extent without diminishing the capacity of the fan for producing an effective draft. The chimney is a fixture, and cannot be altered to suit



VIEW OF SIROCCO FAN WHEEL.

circumstances. The fan is portable, and can be applied in any convenient position or removed to suit a new location of the boilers.

In new installations where fans are employed, it is only necessary to provide a short stack of sufficient height to carry the flue gases above the level of the factory roof, but fans can also be very effectively employed for increasing the draft power of existing chimney installations.

There are many different makes of fans upon the market which have established a good reputation for themselves, and their general arrangement and construction are well known. Usually the wheel consists of six or eight blades or paddles of considerable depth radially, this wheel being enclosed within a casing, the inlet to which is about one-half the diameter of the wheel itself, and the outlet of somewhat less area.

Recently, however, a new design of fan called the "Sirocco" has been placed upon the market, and which it is claimed represents a new departure in apparatus of this class. We reproduce illustrations of this fan, chief among the new features in which is the shape, size, and number of the blades. These blades are very short radially, and are of curved form. The number of blades in each wheel is large; as a matter of fact there are 64. The inlet and outlet of the fan are approximately equal in diameter to the wheel itself, so that the area for intake to the wheel is considerably greater than in the old construction. It is claimed that the special form of blade employed and its special size and shape do away almost entirely with the detrimental and power-absorbing eddies which are so frequent with a number of other fans.

It is further claimed that the velocity of the air discharged from the Sirocco wheel is greatly accelerated, so much so that it exceeds the peripheral speed of the blades by as much as 70 per cent.

The Sirocco fan is said to have shown very

VIEW OF INLET AND DISCHARGE OPENINGS OF SIROCCO CENTRIFUGAL FAN.

high efficiencies in tests under practical working conditions. It is the invention of S. C. Davidson of Belfast, Ireland, and of recent years has been very generally adopted in Great Britain and Europe, but has only recently been introduced in this country. However, there are already many successful installations in operation, and we believe the fan has come to stay. The suppliers in this country are the Sirocco Engineering Co., 22 Thames St., New York City.

Fifty-seven new cotton mills were erected in Lancashire last year with a total of 4,955,000 spindles.

GREEN'S AIR HEATER.

Air may be heated and dried, in the same way that water is heated in an economizer, by the waste heat in the flue gases, and the Green Fuel Economizer Co. has recently introduced a device for this purpose called Green's air heater, and illustrated in Fig. 1. It will be seen that the air heater is constructed substantially like the economizer, with the exception, however, that, while in the economizer all the water enters at the bottom header and passes out from the top header, in the air heater the air is forced

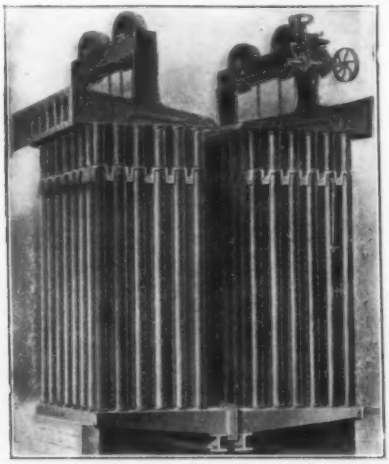


FIG. 1.

by a fan first down through one set of tubes and up through another set, and then down again and so on until it leaves the heater to be distributed by pipes to drying chambers, work rooms or other places where it is to be used.

The tubes of the heater are eight feet long between headers, with an internal diameter of 3 7/8 inches, and are hydraulically pressed into the top and bottom boxes, which are of a sloping design to ensure uniform velocity and distribution of the air in passing over from one set of tubes to the next. The air moves at a good speed, and there is no possibility of short circuiting or eddying, resulting in the highest efficiency of the heating surface. It will be noted, Fig. 2, that there are separate top and bottom boxes for each row of tubes, so that any number of rows can be set up together for any capacity of plant or amount of air required, while the number of groups may be increased if it is

FIG. 2.

desired to prolong the time that the air is in the heater in order to bring its temperature nearer to that of the flue gases from which it receives its heat.

The cold air from the blower enters the heater at the end where the flue gases leave to pass to the chimney, while the heated air is taken out at the end nearest the boiler, where the flue gases are the hottest. In this manner uniform and high difference of temperature is maintained between the flue gases outside the tubes and the air inside the tubes, a condition required for the most rapid transfer of heat through a given amount of conducting surface.

These heaters have for some time been in successful operation in steam laundries, hospitals and textile mills. In laundries the heater and economizer can be worked together very nicely, the economizer furnishing the hot water for washing, etc., and the heater the air for drying the clothes. This is the arrangement shown in Fig. 3, where the heater will be seen at the very end of the economizer, and it will also be noted that the heater scrapers are operated by the same machine that operates the scrapers of the economizer. A test made on this plant, which contains 144 economizer tubes and 72 heater tubes, gave the following results:

Temperature of gases entering economizer .....460° F.
Temperature of gases entering air heater .....301° F.

Temperature of gases leaving air heater .....257° F.
Temperature of water entering economizer .....112° F.
Temperature of water leaving economizer .....248° F.
Temperature of air entering air heater ..... 70° F.
Temperature of air leaving air heater .....152° F.

In another test made upon a heater containing 240 pipes, the following results were obtained:

Duration of test .....8 hours
No. of cubic feet of air entering fan per minute at 54° F. 4,616
Rise of temperature of air .....147.6° F.
Temperature of boiler flue gases entering heater .....512° F.

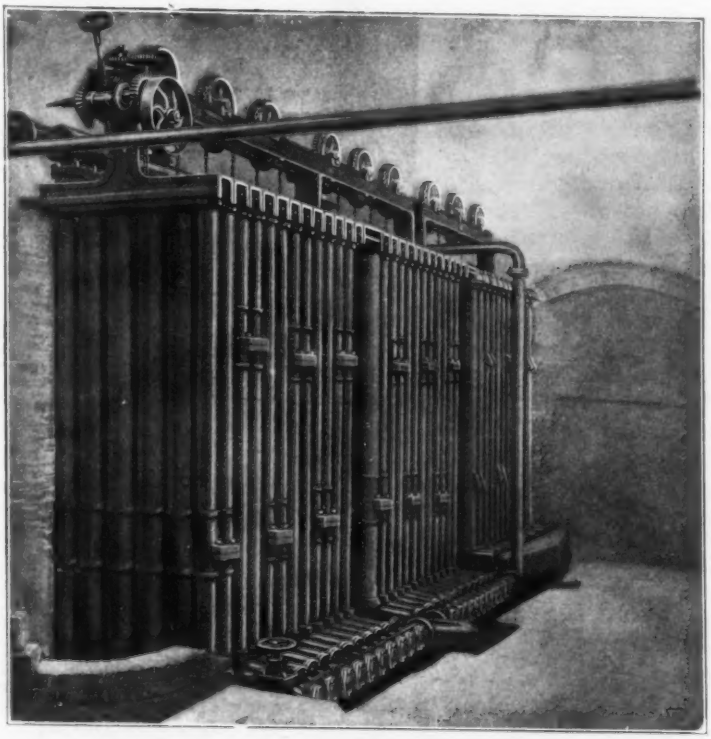


FIG. 3.

It will be noted that the water leaving the economizer is considerably above boiling temperature for atmospheric pressure, while the air leaving the heater has a temperature of 152 deg. F. Air heated to this temperature from ordinary atmospheric conditions will take up nearly .01 lb. of water per cubic foot, making it very effective for drying purposes. The air heater in this plant is relatively small, and by increasing the number of tubes a higher temperature of the air could easily be obtained.

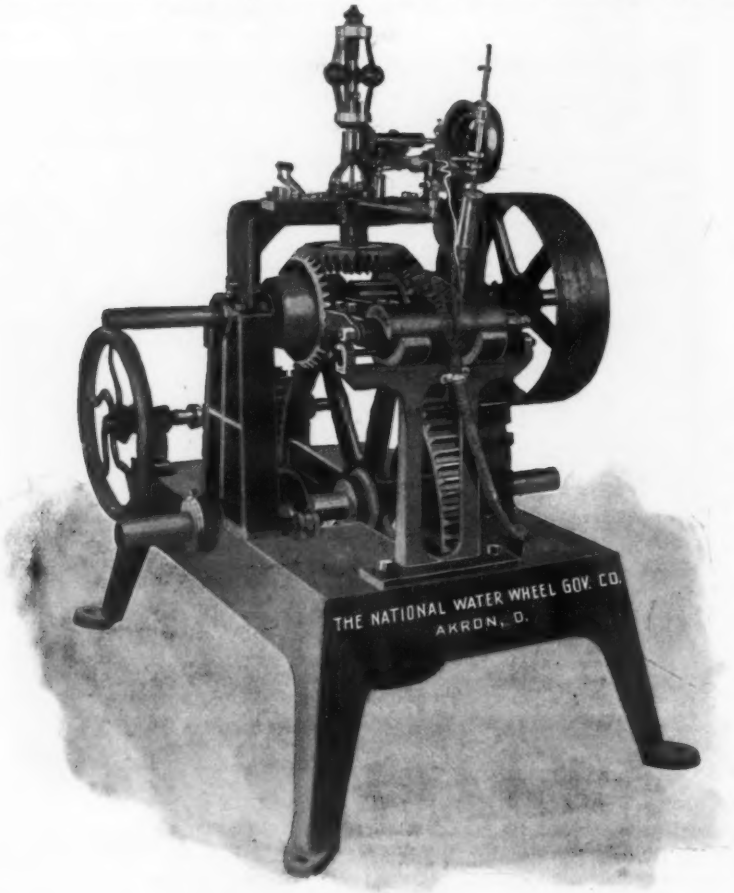
Temperature of boiler flue gases leaving heater .....319° F.
Coal used in 8 hours, 51½ cwt. = 12.02 lbs. per minute
Air pressure at inlet to heater, 2" water gauge
Air pressure at outlet from heater, 1" water gauge
Area of inlet pipe to heater.....330 sq. in.
Combined area of outlet from heater .....344 sq. in.
Average speed of a 54-inch diam.

steel plate fan in revolutions per minute 633

It will be noted in this test that 4,616 cubic feet per minute of free air at 54 deg. F. were heated through a range of temperature of 147.6 deg., representing 12,642 B. T. U. saved per minute. As 12.2 lbs. of coal were being burned in the boiler furnace per minute, this represents roughly about 9 per cent. of the total heating value of the fuel, or, assuming average boiler efficiencies, about 14 per cent. of as much heat as was recovered in the boilers themselves. In another way of looking at the matter, it represents a saving of nearly a pound of coal per minute, or over a ton a week, an amount certainly sufficient to make the installation of the heater a very good, paying investment.

A NEW WATER WHEEL GOVERNOR.

As is well known, reliable water wheel governors must be highly sensitive and automatic. The National Water Wheel Governor Co., Akron, Ohio, manufacturers of the governor shown in the accompanying illustration, claim that this machine is peculiarly fitted to these exacting requirements. The



THE NATIONAL WATER WHEEL GOVERNOR.

number of parts is extremely small, affording simplicity of construction and great durability. It has no pawls, ratchets, trips or slides. A double ended cone clutch and two outer friction cones are mounted on the pulley shaft; one of the outer cones is keyed to the shaft and drives the other outer cone in a reverse direction by means of an idler gear. The desired gate movement is then effected by pressing the cone against one or

the other of the outer clutches. The double ended cone is spur geared to the master gear through which passes the gate moving shaft. The attachment can be made at either end of this shaft to the gate shafting. The driving pulley can rotate in either direction and can be placed on either end of its shaft. This makes the governor easily connected and installed.

A powerful electro magnet or solenoid plunger is attached to a fulcrumed lever and this lever presses the cone clutch one way or the other to move the gate. The governor is thus electrically tripped and gives practically instantaneous response as the outer clutches are in constant rotation. A quick acting spring governor head operates a small lever and this lever closes the circuit one way or the other as the case may be. The electrical coil is properly encased or armored and if electricity is not available the manufacturers are prepared to furnish a small dynamo, which can be placed where convenient. The dynamos are thoroughly guaranteed by the makers. The speed of the plant can be readily changed while the governor is in motion. The governors are guaranteed and testimonials will be furnished upon application.

Sericulture in Brazil.

The Austrian consul at Rio Janeiro reports that attempts have been made to establish sericulture in several states of Brazil. Small filatures have been established at Parana and Minas-Geraes near two large weaving mills, one of which is a German and the other an Italian enterprise. The products are silk umbrella cloth and passamenterie. At Rio Janeiro and St. Paul there are several small mills, which, however, are unable to compete with foreign goods in spite of Brazilian duties.

In regard to finished goods the Swiss policy is not unlike that of Germany. They import muslins in the grey under a lower tariff, and then finish and have a heavy tariff on finished goods. In some instances, administration charges in Switzerland are said to be less than in this country.—British Tariff Commission.

A NEW ENGINE.

The accompanying cuts are sectional and perspective illustrations of a new vertical forced lubrication engine, built by the B. F. Sturtevant Co., Hyde Park, Mass. This engine belongs to class VS5, and is high speed and automatic. A system of forced lubrication and the complete enclosure of the moving parts ensure continuous operation for weeks at a time without attention, and perfect reliability even in the hands of the unskilled. This type of engine is adapted to all classes of work requiring maximum power in minimum space; a condition attained by operation at the high speed made possible by the refined design, high grade construction and the use of the best material. It is specially designed for driving direct connected generators. Because of the large diameter and the short stroke great power is developed at a high rotative speed without excessive piston travel.

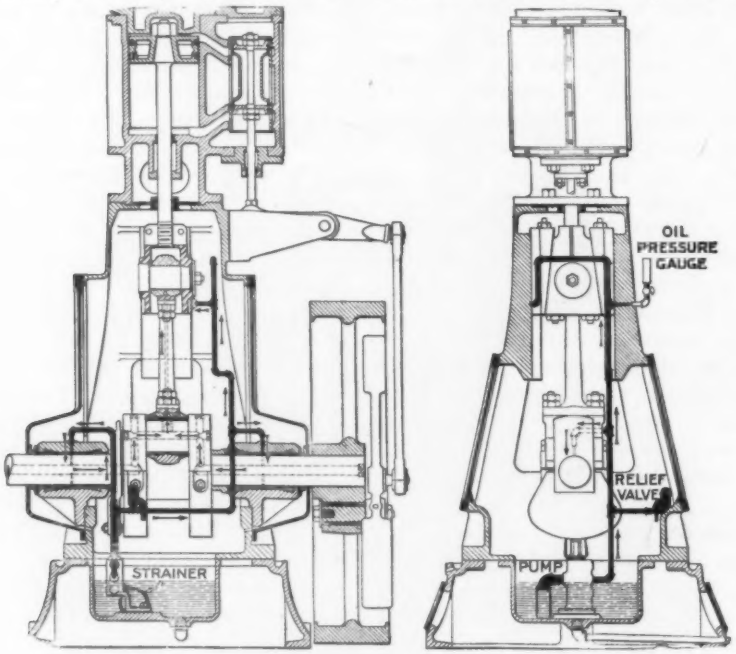
Within the heavy cast iron base, to which is bolted the lower part of the frame, a submerged oil pump, operated by the crank shaft, draws oil from the reservoir and forces it through pipes and internal passages in the moving parts to the crank pin, the wrist pin and the main bearings. Twice during each revolution the reversal of stress on these parts, due to the double acting feature of the engine, so reduces the pressure that the pump has an excellent opportunity to force between the surfaces a fresh film of oil, which is carried around to lubricate the rotating parts when the pressure is greater. The pressure of 10 to 20 pounds per square inch positively maintains this film of oil, preventing actual contact of metal, reducing wear and friction to a minimum, and ensuring a mechanical efficiency of over 90 per cent. Centrifugal oil guards located on the shaft just where it passes through the casing, together with the enclosing frame and the water shed partition ensure perfect cleanliness and absolutely prevent the escape of the oil, which is continuously repumped to the bearings.

The cylinder, with which is cast the valve chamber, is provided with relief valves which, by opening automatically at any predeter-

mined pressure, prevent possible damage by water. A sheet-iron cylinder casing enclosing a thick layer of asbestos greatly reduces condensation. This lagging need not be disturbed, for the cylinder is tapped for the indicator. The flow of steam to and from the cylinder is controlled by a perfectly-balanced piston valve possessing the simplicity of the plain slide valve, but requiring the minimum of power to operate. The snap rings on this valve insure tightness, and the bushing in which it moves may be easily replaced when worn. A Rites governor, placed within the heavy fly wheel, gives motion to the valve through the medium of a rocker, and alters the cut-off by changing the valve travel, permitting only 1 1/2 per cent. variation in speed between no load and full load. The hollow cast-iron piston, strengthened by internal ribs, is fastened to the piston rod by a forced taper fit, secured by a nut. To prevent leakage without unduly increasing friction, the cast-iron packing rings are turned to a perfect contact.

Open-hearth steel is the material from which are forged the piston rod, connecting rod, and crank shaft, each from a single piece. The composition boxes of the connecting rod are lined with Sturtevant white metal hammered in and accurately bored; the cast-iron cross-head is equipped with adjustable shoes and a nickel-steel wrist pin; and the crank pin is of such unusually large size that it cannot heat for the intensity of pressure is always low and the lubrication ample and positive.

In the construction of these engines only the highest grade of workmanship, finish, and material is allowed. The parts, which are interchangeable throughout, are made to gauge and template, ground or scraped to surface plate wherever such accuracy is desirable, exposed surfaces such as cylinder head, steam-chest cover, rim and face of fly wheel are highly polished, other parts being filled, rubbed down, and painted.



A STURTEVANT VERTICAL ENGINE.

For the eleven months ending November, 1905, the United States imported 233,894,038 pounds of wool valued at $44,559,379. Of this amount 65 million pounds came from Great Britain and 50 million from South America.

THE ELECTRICAL FEATURES OF THE NEW WOOD WORSTED MILL.

There is under construction at South Lawrence, Mass., what is to be unquestionably the largest and most finely equipped factory in the world for the manufacture of worsted yarn. This mill, that of the Wood Worsted Company, will embody many novel features and conveniences for the comfort of the five thousand employes. It will have a total floor space of 1,300,000 square feet distributed in three buildings. Of these, the main structure will be 1,437 feet long, 123 feet wide and six stories in height. Apart from this will be the power house, boiler house and office. This latter is so arranged that, in event of future extensions, it will form a portion of another mill, which is planned to be a duplicate of the one now in process of construction.

In the electrical equipment of this mill there are several unique engineering features as well as interesting details in the general plan of operation which invite special attention. The main building will be heated and ventilated by the blower system and the further comfort of the operatives is assured by the proposed installation of escalators of such a capacity that they will carry the 4,000 employes in this structure from basement to the top in five minutes. The boiler house for supplying steam to the plant will eventually contain forty horizontal return tubular boilers, 78 inches in diameter and 20 feet long. Mechanical draft with duplex fans and economizers will provide for the most economical fuel consumption.

In the power house are to be located two main generating units. These consist of a double non-condensing engine rated at 1,800 h. p., running at 133 r. p. m., direct-connected to a 1,500 kilowatt General Electric generator and a second unit, comprising a compound condensing engine with two vertical and two horizontal cylinders of 5,000 h. p. capacity, running at 120 r. p. m., direct-connected to a 4,000 kilowatt general electric generator. The exhaust steam from the non-condensing engine will be used for heating, wool-washing, dyeing and finishing, and the condensed water from the compound engine will also be used in these operations. In addition to the main generating units, there will be one small 100 kilowatt, 240 r. p. m. generator for light loads and emergency work. Excitation current for the generating units will be furnished by a 65 kilowatt, 125 volt motor driven generator, with a small direct-connected steam unit of like capacity acting as a reserve.

These main generating units mentioned above will supply current at forty cycles and 600 volts to a most complete and modern switchboard from which distributions will be made to the various buildings. The switchboard will consist of thirty-three panels, with lighting and power feeder circuits grouped on opposite ends of the board. These circuits are planned so that different parts of the mill can be operated individually. Without unessential detail it may be stated that about 5,000 h. p. of induction motors will be employed for this group driving of machinery. The motors are of the latest General Electric type, wound for 550 volts, and range in size from eight to 175 h. p. All motors are planned for ceiling suspension. With each motor of 125 h. p., or above, a non-automatic switch will be installed, as each of these motors is on a separate feeder circuit protected at the main switchboard by an automatic switch. The smaller motors are safeguarded by automatic oil switches installed on a trunk line.

Probably the lighting system is of most interest to engineering readers. The general lighting will be done by direct current arc lamps, the steps in current transformation from alternating to direct being taken by constant current transformers and mercury arc rectifiers. This is an unique system which possesses marked advantages as to first cost and economy of operation over the ordinary methods of transformation. In this case constant current from the main generating units is obtained by four fifty-light General Electric constant current transformers. The constant alternating current so obtained is rectified by means of the General Electric mercury arc rectifiers and operates two hundred direct current arc lamps. Aside from the arc lighting, six 25 kilowatt and two 10 kilowatt General Electric Type H transformers will furnish current for the incandescent lamp illuminations.

Dyeing, Bleaching, Printing, Etc.

FAST BLACK ON HOSIERY.

BY F. B. THOMAS.

There are three processes now in use for dyeing fast black on hosiery; the aniline salt black, the diazotized and developed black and the sulphur black Of these aniline salt black is used most, nearly all the best known brands of hosiery being dyed with it.

There are as many formulas for dyeing black as there are dyers, but the principle is the same in each case. Some dyers use the one-run method and others the two-run method; that is, the goods are pounded in the tom-tom once or twice. When dyeing hosiery with aniline salt it is customary to make a stock solution in a tank, one dyer that I know using the following ingredients:

40 lbs. bluestone,
30 lbs. chlorate potash,
12 lbs. sal ammoniac,
6 lbs. verdegris,
130 lbs. aniline salt,
Water to make the solution 14 deg. Tw.

This solution should be kept cool in order to prevent premature oxidation; in summer it is a good plan to keep ice around the tank.

The stockings usually go to the dye house turned inside out in order to prevent roughing of the face during the dyeing and oxidizing operations. They are first put into the tom-tom with just enough of the standard solution to cover them, and pounded from fifty minutes to one hour. The tom-tom is a round tank, which revolves slowly, and is fitted with uprights with large wooden blocks at the base made to rise and fall by means of a crank shaft. These uprights are called pounders and as they rise and fall they beat the liquor into the goods. After being pounded in the tom-tom for the required time the goods are extracted about three-quarters dry, that is, about three parts of the solution is taken from them, and the solution saved to use again.

After extracting the goods are put into oxidizing cages and run from three to five hours at a temperature from 80 to 100 degrees F., until they are a good dark green. Care must be taken that the temperature is not too high, or the goods will be tendered. Some dyers use an electric thermometer on the principle of the thermostat to give an alarm when the heat reaches more than the required degree. The oxidizing cages are cylindrical in form, about 12 feet long and 7 feet in diameter, covered with coarse woven wire, divided in the centre by a perforated partition. The heat for oxidizing comes from a steam coil and is blown into the cage through a central hollow and perforated shaft. These cages make about twelve or fourteen revolutions per minute.

The stockings are next carried to the aging room and spread out on racks for twelve hours. These racks are made of slats and raised from the floor so that the air may circulate freely. They are next given from five to seven per cent. of chrome, for thirty to fifty minutes, then washed, extracted, and sent to the boarding room to be boarded while damp. The chroming machine generally used for this work is made with a double cylinder, the outer one stationary, and the inner one perforated and revolving on a shaft. After several turns in one direction the motion is reversed to prevent the goods knotting or rolling together during the chroming and washing operations.

When properly used aniline salt gives a deep, permanent and ungreenable black and all the leading brands of black stockings are dyed with it. A disadvantage of this process is the liability of tendering the goods during oxidation.

Good shades can also be obtained by using the standard brands of diazotized and developed blacks. By this method the goods are first well boiled out in water, then extracted and entered into the dye bath made up with 5 per cent. of dye stuff, and 10 per cent. of salt for each hundred pounds of goods. After boiling for one hour the goods are diazotized

with 3 pounds nitrate of soda and 12 pounds hydrochloric acid, next rinsed and developed with 12 ounces Phenylene Diamine, and 1 1/2 pounds soda crystals, then washed, extracted and boarded. This gives a very good black, but in prolonged boiling with white it stains the white slightly.

Still another method for dyeing hosiery a fast black is by the use of the sulphur colors. This gives a very good black, equal to the aniline salt black in many respects and has the advantage of being dyed direct. Care must be taken, however, to keep the goods entirely submerged during the dyeing process. The goods should be well boiled out previous to dyeing, then extracted and dyed for one hour at a boil in a standing kettle made up with the following solution:

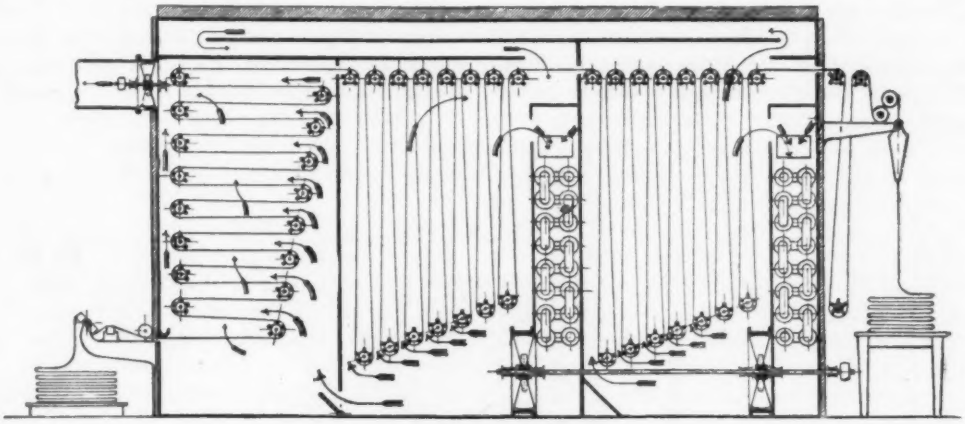
8 per cent. sulphur black,
16 per cent. sulphide sodium,
2 per cent. soda ash,
15 per cent. salt.

As in the other processes the goods should be dyed in a closed machine. If they are left exposed to the air for any length of time before they are washed, they are liable to have a bronzed appearance. After dyeing they should be well washed and soaped and then sent to the boarding room to finish. The disadvantages of sulphur black are the liability to bronze if exposed to the air during dyeing, and a tendency to crock slightly if not well washed.

Each of the methods described above gives a very good black, but the aniline salt black is most popular on account of the beauty of its shade and its lasting qualities.

A CLOTH CARBONIZING MACHINE.

The accompanying illustration shows a new German machine for carbonizing cloth, which is claimed to be very effective in regard to both quality and quantity of production. The advantages result from the manner in which the cloth is carried through the machine and exposed to the circulation of hot air. The heaters are arranged in separate chambers in a peculiar manner. The suction fans are so arranged as to produce a continued circulation of air through the heaters and through the carbonizing chamber.



A CLOTH CARBONIZING MACHINE.

The machine consists of two chambers, the first being used for drying and the second for carbonizing. Between them is a compartment filled with steam pipes; another heating chamber is built in the carbonizing section. The dry room is divided by a partition into two parts. In the first part the cloth is carried back and forth in a horizontal direction, while in the second, and also in the carbonizing chamber, it is carried vertically as shown in the illustration.

The horizontal position of the cloth when it enters the chamber prevents a settling of the acid liquor in the goods, which would cause irregular carbonizing and defects in

the fabric. The vertical position of the folds in the other two chambers has the advantage of exposing every part of the cloth to the action of the hot air, which is then returned to the heating chamber. In this way the goods are dried and carbonized very rapidly at the least expenditure of heat.

By reason of the inclined position of the lower layer of guide rolls the air is distributed much more effectively among the different folds. In other carbonizing machines the lower layer of cloth receives most of the heat, the air passing sideways between the cloth and the walls of the machine, with the result that the middle and upper layers do not get the required amount of heat. The circulation of air through the machine is shown by the arrows in the sketch. The pipes are heated with direct steam, fresh air entering by the openings in the side of the heating chambers, where it is heated and then forced to the drying and carbonizing chambers. Most of the heat, after being once used, is returned to the heating chamber, where it is mixed with a proportion of fresh air. The remainder of the air which has been used for heating and carbonizing passes along the top of the machine, preventing a condensation of steam on the ceiling, after which it finds its way back to the heating chamber. By means of a ventilator the acid fumes of the machine are carried out of doors and not into the work room. The machine is built in different sizes up to an evaporating capacity of 5,000 pounds per day.—Oesterreich's Wollen und Leinen Industrie.

AN IMPROVED PIECE DYEING MACHINE.

After pieces have been colored the liquor is ordinarily cooled by introducing cold water at the upper part of the tub while the hot liquor is allowed to run out at the bottom. In this way the cold water comes in direct contact with the hot goods, often causing variation in the shade. It often happens also that the liquor runs off faster than the cold water runs in, causing the hot goods to lie in folds, which produces shades and streaks. It is proposed to obviate these difficulties by the use of the dye kettle shown in Figs. 1 to 3.

Fig. 1 shows a front section, Fig. 2 is a longitudinal section, Fig. 3 shows the arrangement of the overflow. At the back of the kettle, Fig. 2, is the opening, c, into the box, e. Cold water enters at the bottom of the kettle through the pipe, f. In this way the level of the liquor is raised so that it flows into the box, e, and the cold water is gradually mixed with the hot liquor, cooling the bath gradually. The goods are kept in motion during this process and are likewise cooled uniformly and slowly. The surplus liquor caused by the condensation of steam during boiling flows through the opening, c, thus keeping the liquor at a uniform level during the dyeing process.

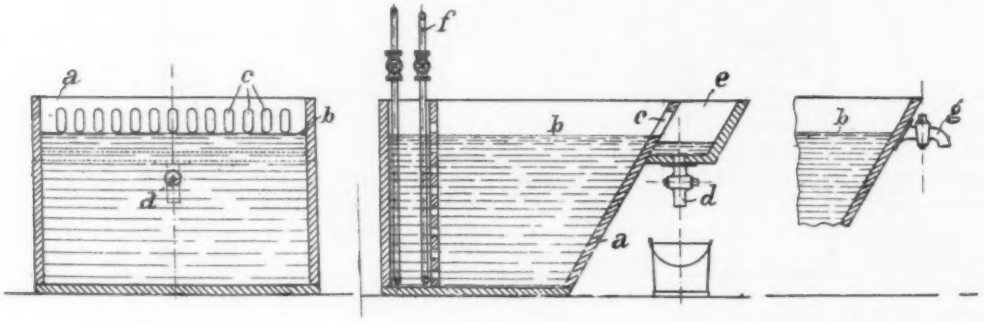


FIG. 1. FIG. 2. FIG. 3.

Fig. 3 shows another form of this dye kettle by which the box, e, Fig. 2 is displaced, and an ordinary overflow pipe and valve inserted in the side of the kettle.—Leipziger Monatschrift fuer Textil-Industrie.

THE TECHNICAL EDUCATION OF A DYER

Address by M. C. Lamb, F.S.C., before the Society of Dyers and Colorists.

Where is the foundation for technical instruction to be laid in a boy's life? My contention is that facilities should be afforded for the obtaining of his instruction throughout his whole life. The great mass of the working population, who must necessarily begin their livelihood at an early age, from which our foremen will be most selected and many employers will spring, can hardly commence their hand and eye training too soon, as only by such training does a boy become self-reliant, and the first step toward his obtaining a broadly trained logical mind, capable of concentration of thought on any subject, is obtained. The training that a boy gets while attending school is all-important to the final education of a young man.

The boy of 16 or 17, ready to leave school, should be possessed of a good, sound general education. He is now to take his second step—the step toward specialization—specialization in the particular sphere of dyeing, in the present instance. Much has been said as to the desirability or otherwise of the student entering upon his studies at some technical institute or school, at once after leaving school, or whether it is best to spend some little time first, say a year, in the particular business he is intending to follow, in order to get an idea of the practical side of his particular industry.

It is essential for the technical student to have a good knowledge of the particular industry he intends to interest himself in, viewed from the practical standpoint, in order that he may derive the maximum benefit from the teaching of the technical side of the subject. A student that comes to the technical school immediately after leaving school knows nothing of the materials or industry he will have to deal with later, and much time is wasted in teaching him the rudiments and practice of the business, which is readily picked up in the works. Having some practical experience he is better able to appreciate the technical training he is undergoing, and at once to grasp the salient points continually being brought to his notice. In order that he may not lose touch with study during the time he is in practice, he should attend evening classes during this year of practical work, on subjects that will be a preparation for his technical studies later. For the dyer, classes in chemistry and physics, bookkeeping, etc., are to be recommended.

We presume that our student is now prepared for his technical education. The term is one that it is usual to mis-apply. Technical education means training in the art of any kind of labor, and is quite distinct from the science pertaining to that art. Mr. John Wallace in a lecture on the subject said that "it was just possible that the choice of a Greek rather than of a Latin root might have something to do wtih the popular misapprehension, for techne simply means art, and the peculiarity of all art is that it can not be communicated by writing alone, however well instructed the writer may be. In this respect it is clearly distinguished from science, which, as it represents exact knowledge, can be clearly and completely expressed in print. Craft is a term synonymous with technique and art, but the latter appears to be the most appropriate term with which to express one of the two great divisions of our knowledge of physical work, for it expresses with equal appropriateness the skill of the painter, the smith, the gymnast, the hunter or the ploughman. For instance, you may read an elaborate treatise upon the science of nailing doors to their framing, but however carefully you may read it, it will not save you from hitting your fingers at the first attempt to put the information into practice; for you have still to learn the art of driving nails. A technical college is usually an institution where industrial art or technique is quite subordinate to science; it illustrates the misuse of the word "technical," which will apply far more justly to what has been dubbed an arts and crafts school. This new title, while it only expresses the same idea twice over, is an attempt to separate the industrial from the fine arts, which needs no further definitions than those already possessed."

The dyer must be trained in the art as well

as in the science of dyeing; he must have a thorough knowledge of the chemistry of his subject, he must possess a sound knowledge of the principles underlying his vocation; the artistic side of his character must be fostered, because above all he must possess "taste," and finally, unless he will be content to remain an executive dyer all his life, he must have a good commercial training, so that he can put his talents to good profit when he blossoms out as a manager or manufacturer on his own account.

In addition to these numerous qualifications, he must obtain a thorough knowledge of the manufacturing processes through which the particular goods he is treating have passed before they come into his hands, and also the various processes involved in the succeeding finishing processes.

(To be continued.)

New Color Cards.

Immedial Cutch; Cassella Color Co., New York City.

A folder showing four shades each of Immedial Cutch B G, Immedial Cutch B GG, and Immedial Brown B R, on loose cotton, cotton yarn and cotton piece goods.

Immedial Green B B Extra; Cassella Color Co., 182 Front St., New York City.

Two samples of raw cotton, two of cotton yarn and two of cotton piece goods showing 5, 4 and 8 per cent. dyeings of Immedial Green BB Extra, for which full working directions are given.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation Subscription price for the Dyers' Supplement $1.00 per year

Recipe No. 17.

Red on Cotton Yarn.

Columbia Fast Red F on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Columbia Fast Red F.
(Berlin Aniline Works, 215 Water St., New York.)
½ lb. Sodium Carbonate.
30 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Columbia Fast Red F may be employed both as a shading color and as a self-color, for vegetable fibres and fabrics of which a high degree of fastness to light and acids is required.

Recipe No. 18.

Red on Worsted Yarn.

Columbia Fast Red F on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Columbia Fast Red F.
(Berlin Aniline Works, 215 Water St., New York.)
20 lbs. Glauber's Salt.
1½ lbs. Acetic Acid.

Enter at 180° F. and dye at a boil for one hour. Then aftertreat by adding

3 lbs. Chromium Fluoride

to the dye bath and boiling ½ hour longer.

Columbia Fast Red F, when aftertreated in this way, gives shades of red possessing excellent fastness to light and milling.

Recipe No. 19.

Red on Worsted Yarn.

Columbia Fast Red F on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Columbia Fast Red F.
(Berlin Aniline Works, 215 Water St., New York.)
20 lbs. Glauber's Salt.
1½ lbs. Acetic Acid.

Enter at 180° F. and dye at a boil for one hour.

Columbia Fast Red F possesses extreme fastness to light and good fastness to stoving.

When aftertreated with chromium fluoride as in dyeing recipe No. 18 fastness to milling is much increased.

Recipe No. 20.

Brown on Cotton Yarn.

Tetrazo Brown D H on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Tetrazo Brown D H.
(American Dyewood Co., 156 William St., New York.)
1½ lbs. Soda Ash.
30 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour. Fuller and brighter shades are obtained if the material is allowed to steep for 15 minutes after shutting off the steam.

Tetrazo Brown D H will be found valuable in the direct dyeing of all forms of cotton material.

Recipe No. 21.

Green on Worsted Yarn.

Alkali Fast Green 3 B on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Alkali Fast Green 3 B.
(Continental Color & Chemical Co., 128 Duane St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter yarn at 140° F. and dye at a boil for one hour.

Alkali Fast Green 3 B is a very level dyeing color, possessing excellent fastness to alkalies, and resistance to chroming. It is therefore valuable in the shading of mordant and acid mordant colors.

Recipe No. 22.

Black on Worsted Yarn.

Anthracene Chrome Black P F B Extra on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Anthracene Chrome Black P F B Extra.
(Cassella Color Co., 182 Front St., New York.)
20 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter at 140° F., bring slowly to a boil and dye at a boil for ½ hour and then gradually exhaust by the addition of sulphuric acid.

Anthracene Chrome Black P F B Extra will be found to give a black of excellent fastness and tone.

Recipe No. 23.

Blue on Worsted Yarn.

Xylene Blue A S on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Xylene Blue A S.
(Walter F. Sykes & Co., 85 Water St., New York.)
15 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter yarn at 140° F., raise to a boil slowly (in not less than ½ hour) and dye at a boil for ½ hour.

Xylene Blue A S dyes perfectly level when entered at a boil, but the gradual increase of temperature tends to develop the color slowly, insuring fastness to scouring, fulling and rubbing.

Xylene Blue A S can be dyed upon a chrome mordant, but this is not necessary to produce fastness.

Recipe No. 24.

Yellow on Woolen Cloth.

Acid Yellow G A on 100 lbs. woolen cloth. Prepare the dye bath with

3 lbs. Acid Yellow G A.
(C. Bischoff & Co., 88 Park Place, New York.)
20 lbs. Glauber's Salt.

Enter material at 140° F., bring to a boil and boil ½ hour, then add

1 lb. Sulphuric Acid,

boil 15 minutes longer and add

3 lbs. Sulphuric Acid,

and continue the dyeing until the bath is exhausted.

Acid Yellow G A will be found to possess excellent fastness, and be of valuable service in the production of compound shades.

Recipe No. 25.

Violet on Cotton Yarn.

Katigen Violet B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Katigen Violet B.
(Continental Color & Chemical Co., 128 Duane St., New York.)
2 lbs. Sodium Sulphide.
2 lbs. Sodium Bicarbonate.
20 lbs. Glauber's Salt.

Add the soda ash to the dye bath, boil up, and then add the dyestuff dissolved in the sodium sulphide. Boil up again and add the Glauber's salt, then enter the yarn, turn off the steam and dye for one hour.

Katigen Violet B possesses good fastness to most of the color-destroying agencies and will be found valuable for shading purposes.

Recipe No. 26.

Blue on Worsted Yarn.

Chrome Fast Cyanine R on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Chrome Fast Cyanine R.
(A. Klipstein & Co., 122 Pearl St., New York.)
10 lbs. Glauber's Salt.
6½ lbs. Acetic Acid (30%).

Enter yarn at 140° F., boil ½ hour and then add

1 lb. Sulphuric Acid

and boil ¾ hour longer, then add

2½ lbs. Potassium Bichromate

and finish by boiling ½ hour longer.

Chrome Fast Cyanine R possesses excellent fastness to washing, milling, carbonization, perspiration and light.

Recipe No. 27.

Pink on Worsted Yarn.

Rhodamine B on 100 lbs. worsted yarn. Prepare the dye bath with

1½ lbs. Rhodamine B.
(Edwin M. Thayer & Co., 411 Atlantic Ave., Boston.)
10 lbs. Common Salt.
3 lbs. Acetic Acid.

Enter goods at 140° F., dye at a boil for one hour. Bath may be completely exhausted by the addition of a small quantity of acetic acid.

Rhodamine B gives an excellent pink upon worsted and woolen material of every variety.

Recipe No. 28.

Blue on Cotton Yarn.

Chlorazol Brilliant Blue R on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Chlorazol Brilliant Blue R.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)
5 lbs. Common Salt, Glauber's Salt or Sodium Sulphate.

Coppering should be carried on for 20 minutes at 140° F., with up to

2 lbs. Copper Sulphate,

according to depth of shade required.

Chlorazol Brilliant Blue R has very good fastness to light, washing and alkalies, and excellent to acids. The coppered shades are exceedingly fast to light and washing.

Recipe No. 29.

Blue on Worsted Yarn.

Chrome Fast Cyanine B on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Chrome Fast Cyanine B.
(A. Klipstein & Co., 122 Pearl St., New York.)
10 lbs. Glauber's Salt.
6½ lbs. Acetic Acid (30%).

Enter yarn at 140° F., boil ½ hour and then add

1 lb. Sulphuric Acid,

boil ¾ hour longer, then add

2½ lbs. Potassium Bichromate

and boil ½ hour longer.

Chrome Fast Cyanine B possesses excellent fastness to washing, milling, carbonization, perspiration and light.

Recipe No. 30.

Red on Cotton Yarn.

Brilliant Chlorazol Fast Red 10 B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Brilliant Chlorazol Fast Red 10 B.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)
5 lbs. Common Salt, Glauber's Salt, or Sodium Sulphate.

Copper for 20 minutes at 140° F., with up to

2 lbs. Copper Sulphate,

according to shade required.

Brilliant Chlorazol Fast Red 10 B in direct dyeings has very good fastness to light, washing and alkalies, and excellent to acids. The coppered shades are exceedingly fast.

Recipe No. 31.

Green on Woolen Cloth.

Fast Acid Green O on 100 lbs. woolen cloth. Prepare the dye bath with

3 lbs. Fast Acid Green O.
(C. Bischoff & Co., 88 Park Place, New York.)
20 lbs. Glauber's Salt.

Enter the material at 140° F., bring to a boil and boil ½ hour, then add

3 lbs. Sulphuric Acid,

and continue the dyeing until the bath is exhausted.

Fast Acid Green O will be found to possess excellent fastness, and be of valuable service in the production of compound shades.

Recipe No. 32.

Black on Worsted Yarn.

Anthracene Chrome Black P F Extra on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Anthracene Chrome Black P F Extra.
(Cassella Color Co., 182 Front St., New York.)
20 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter yarn at 140° F., bring slowly to a boil and dye at a boiling temperature for ½ hour, then gradually exhaust by the addition of sulphuric acid.

When dye bath is practically exhausted add

3 lbs. Potassium Bichromate

and boil ¾ of an hour longer.

Anthracene Chrome Black P F Extra will be found to give a black of excellent fastness and tone.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Georgia, Clarksville. The Habersham Cotton Mills have been incorporated with capital stock of $100,000 and is now considering estimates on the machinery to be installed in the old Porter Mills, which have been purchased. S. Y. Stribling, president of the Roswell Mfg. Co., is president of the new concern and Aubrey Motz will be superintendent. Yarns will be made and it is proposed to have an equipment of about 10,000 spindles.

*Georgia, Lagrange. Site has been selected by the Elm City Cotton Mills upon which the new mill will be built.

*New Jersey, May's Landing. The Warner-Godfrey Company is the new concern which has established plant here for making towels (fancy linen), etc. M. J. Warner is president and treasurer of the company and J. W. Shea, manager and buyer. It is probable that a very large plant will be erected in the spring. The goods are not finished at the mill at present. New York office is at 377 Broadway.

*North Carolina, Charlotte. At recent meeting of the stockholders of the Woodlawn Cotton Mill, C. E. Hutchinson was elected president and treasurer of the company and J. W. Holland, secretary. It is proposed to erect a mill of about 7,000 spindle capacity.

*North Carolina, Charlotte. The machinery is being installed for the Mecklenburg Cotton Mills.

*North Carolina, Gastonia. Machinery is being installed in the new plant for the Gray Manufacturing Company and it is expected that operations will start about February 1st. This plant will have equipment of 10,240 ring spindles and make yarns, 40s to 80s. Motive power will be electricity.

*North Carolina, Concord. An addition is being built to the Magnolia Mills, No. 1, and will be equipped with 40 Jacquard looms and operated as the Concord Weave Mill. Operations will start about March 1st, making quilts.

*North Carolina, Mt. Holly. Work will start about March 1st on the new buildings for the Woodlawn Cotton Mills, incorporated with capital stock of $80,000 and privilege of increasing to $150,000. This company, of which C. E. Hutchinson is president and treasurer, J. M. Springs, vice-president and J. M. Holland, secretary, will manufacture yarns, in skeins, tubes and cones, 20s to 30s. An equipment of 5,000 spindles will be installed. Electricity will be the motive power. It is expected that operations will start about October 1st.

*Pennsylvania, Philadelphia. The Bachman Braid Manufacturing Co., recently reported by us as having been incorporated at Roselle, N. J., with a capital of $25,000, is about to commence its operations in the building occupied by the Crater Hosiery Co., at 226 Ashmead Street, Germantown, where they are installing 18 braiders and expect to have the plant in running order by the middle of January.

Pennsylvania, Philadelphia. Harry Stott is proprietor of a small plant located at Woodlawn and Sullivan Streets, making cotton toweling on the crash order. Goods are sold direct and a good trade is reported.

*South Carolina, Ware Shoals. The new mill for the Ware Shoals Mfg. Co. has been completed and about one-third of the machinery installed.

*Tennessee, Nashville. The Warioto Cotton Mills will have an equipment of 20,000 spindles and 500 looms this having been recently decided. Contracts for a large part of the machinery have been awarded.

Enlargements and Improvements.

*Alabama, Athens. Work will soon be completed on the addition to the Athens Cotton Mills Co.'s plant. A new addition, 60 by 90 feet, has been built and 2,500 new spindles will be installed.

Alabama, Girard. At recent meeting of the directors of the Eagle & Phoenix Mills, it was voted to expend about $15,000 on enlargements and additions to the Girard Cotton Mills. This plant has present equipment of nearly 6,000 spindles and 250 looms.

Connecticut, Bridgeport. The Connecticut Web Co. is reported as contemplating enlargement to the plant.

Connecticut, Willimantic. The Windham Manufacturing Company is installing new spinning frames in the plant.

Delaware, Wilmington. The Delaware Cotton Co., operating 500 looms on dress goods and fancy shirtings, it is reported have fitted up their dye house with dyeing machines, the purpose of the company being to do their own dyeing in the future.

Massachusetts, Chicopee. The Saco and Pettee Machine Shops are installing a large order of their latest improved machinery, consisting of cards, drawing and roving frames, in the Chicopee Mills of the Dwight Mfg. Co. Both the mills of the Dwight Mfg. Co. at Chicopee, Mass., and Alabama City, Ala., are equipped with Saco and Pettee machinery.

Massachusetts, Fall River. The Saco and Pettee Machine Shops have received an order from the Davis Mills, Fall River, for more of their improved spinning frames. This mill is one of the most modern and best equipped in the country.

*Massachusetts, Lawrence. The Lawrence Duck Company has completed repairs and alterations to the plant, which have been underway for some time. A gas engine has been installed and is in full operation.

Massachusetts, Mansfield. The W. H. Mason Braiding Company's plant at Providence, R. I., has been purchased by D. S. Spaulding of the Mansfield Braiding Co. and will be removed to this place.

*Massachusetts, New Bedford. Work is nearing completion on the new addition for the Beacon Mfg. Co.

*Massachusetts, New Bedford. The new addition to the Dartmouth Mill has been completed and is ready to start up. It will be run in connection with No. 1 mill.

Massachusetts, Thorndike. The Thorndike Co. has placed a large repeat order with the American Moistening Co. for humidifiers, equipping throughout their No. 2 mill.

Massachusetts, Westfield. It is reported that a project is under way for operating the Warren Thread Works by electricity, power to be furnished by Frank L. Worthy. Mr. Worthy proposes installing a 250 k. w. generator in his local power plant which will furnish the necessary power for the Warren Thread Works.

*Mississippi, Laurel. The Laurel Cotton Mills will start work on erection of a new building as soon as possible for the additional machinery reported to be added.

*New Hampshire, Dover. The Cocheco Manufacturing Company is to replace all the boilers in the plant, numbering about 40, with new ones. Six have already been received and will be set up as soon as possible.

*New Hampshire, Nashua. The carpenter work has been completed on the new dye house and bleachery for the Nashua Manufacturing Co., and the machinery is being installed.

New Hampshire, Nashua. The Jackson Co. has placed with the Saco and Pettee Machine Shops, Newton Upper Falls, Mass., a repeat order of their latest improved revolving flat cards.

New Jersey, Newark. The Carl Paas Company is erecting a large building, which it is hoped will be ready for occupancy about March 1st.

*North Carolina, Davidson. The Linden Manufacturing Company, capitalized at $45,000, and with present equipment of 5,248 ring spindles, will add 1,248 new spindles. This concern manufactures cotton yarns, 24s to 30s ply.

*North Carolina, Franklinville. We have been advised by the Franklinville Manufacturing Co., recently reported to replace old machinery with new, that the only change they are making is putting in five new spinning frames.

*North Carolina, Lowell. The Spencer Mountain Mills, which recently voted an increase of stock, will develop water power and make an addition to the present plant, of about 6,000 spindles (ordered).

Pennsylvania, Philadelphia. Weimar Bros., who have been greatly increasing their floor space, will have the new addition in full operation within six weeks. Part of the new machinery has already been installed and is in operation.

*Pennsylvania, Philadelphia. The Lehigh Lace Manufacturing Co.'s new buildings will soon be ready for occupancy.

Rhode Island, Manville. The Manville Co. is putting up their new iron bridge over Blackstone River. This bridge will be used to connect the bleachery with new storehouse and will be completed in about a month.

Rhode Island, Washington. Improvements are being made to the Moon Mill, operated by the Elite Spinning Co., of which W. L. Truesdell is agent, greatly increasing capacity.

*South Carolina, Gaffney. The Limestone Manufacturing Co. will start work March 1st on an addition to the plant which they propose having completed by June 1st. They will install 12,000 new spindles and 300 new looms, which will give them a total when completed of 25,000 spindles and 650 looms, making sheeting.

South Carolina, Lolo. The Valley Falls Manufacturing Co. is to make additions and improvements to the plant. They have completed the installation of two 125 h. p. boilers and a 250 h. p. engine. Contract has been placed for 60 additional looms with accompanying machinery.

South Carolina, Seneca. A meeting will be held Jan. 20th by the stockholders of the Seneca Cotton Mills, to consider proposition for increasing capital and enlarging the plant.

South Carolina, Yorkville. The Tavora Cotton Mill and the Neely Mfg. Co.'s mills are to be operated by electricity, supplied by the Catawba Power Co. The Clover Mills (Clover) are also to utilize electricity.

*Virginia, Danville. The Dan River Power & Mfg. Co. has been awarded contracts for construction and supplies for the new addition to be built, doubling their present capacity.

Mills Starting Up.

South Carolina, Rockhill. The old Chicora Cotton Mills are to be re-equipped and put in operation by the Bellevue Cotton Manufacturing Company. David Clark will be superintendent and general manager of the plant.

Mills Shutting Down.

Rhode Island, Pawtucket. The American Hair Cloth Co.'s mill has been closed owing to labor difficulties.

WOOLEN.

New Mills.

*Massachusetts, Franklin. Work has been completed on the new shoddy mill for Albert Mann and Thomas Buckley and a new picker house, 18 by 25 feet, will be built. As soon as this is completed, operations will be started.

*Massachusetts, Spencer. The looms are being installed in Dufton Bros.'s mill, recently rebuilt. It is expected to have the plant ready for operations within a few weeks.

*Massachusetts, Worcester. We have been advised by N. Pemstein that the Walker Shoe factory has been purchased and will be equipped with machinery for manufacturing wool waste. Six dusters, 10 cards and 2 garnett machines and 2 lumpers will be put in. It is expected that the plant will be ready to start operations by April 1. Steam and electricity will be used for power.

*New York, Jamestown. We have been advised by John Ahlstrom, who recently purchased the Falconer Worsted Mill Co.'s property, that it is proposed to start up the mill under a new name, not yet decided upon.

Washington, Seattle. E. W. Eyanson, formerly with the Seattle Woolen Mills Co. (Kirkland), has purchased land and will erect a 2 set woolen mill. Plant will be operated by electricity.

Enlargements and Improvements.

Connecticut, Danielson. The Pequot Worsted Co. has installed a new dynamo in their mill for furnishing their own lights.

Connecticut, Norwich. The Reliance Worsted Co. has recently increased the capital stock to $150,000.

*Connecticut, Rockville. The Hockanum Mill has been closed for purpose of completing the new water wheel. Operations will be resumed with electricity for the motive power. The new mill has recently been completed and will be equipped with modern machinery.

*Maine, Dexter. Work will be started in the spring on erection of a 40-foot addition to the Wassookeag Woolen Company's mill, for purpose of making additional room for spinning and weaving rooms.

*Maine, Lisbon Centre. The improvements to the Farnsworth Company's mill are nearly completed.

*Massachusetts, Holyoke. Work has begun on the enlargement to the Farr Alpaca Co.'s mill and work will be pushed to completion.

Massachusetts, Millbury. W. W. Windle & Co. will start work at once on erection of a storehouse, 65 by 30 feet, one and one-half stories.

*Minnesota, Fosston. The Fosston Woolen Mill, reported to enlarge the plant, advises us that they have installed only two new looms and that is the only change that has been made.

New Hampshire, Ashuelot. A carbonizing plant is being installed in Hugh Sheridan's mill.

New York, Candor. The Candor Blanket Factory has been closed for the past week, during which time necessary repairs have been made to the machinery.

*New York, Jamestown. The Falconer Worsted Mills Co.'s property, including the machinery, was sold to John Ahlstrom. It is stated that Mr. Ahlstrom proposes resuming operations in the mill at an early date.

New York, Newburgh. Work is progressing on the new addition to the Strook Plush Co.'s mill.

*Ohio, Ravenna. Contract has been let by the Ravenna Worsted Company for erection of a new building, 180 by 52 feet, three stories, of mill construction, and work has been started on foundations.

Pennsylvania, Aston Mills. The May Manufacturing Company will install 100 new looms (ordered) in the plant. It is expected that the additional machinery will be ready for operations about March 1. The company will dispose of about 200 old looms (idle) to make way for the new machinery.

*Pennsylvania, Darby. Contracts have been let by Verlenden Bros. for the additions proposed to their plant last fall. They will add a new dye house and picker house.

Pennsylvania, Philadelphia. The Shelbourne Mills are enlarging their plant, with the addition of 40 worsted looms, for which orders have been placed with the Crompton-Thayer Loom Co. This will give them an equipment of 140 looms.

*Pennsylvania, Philadelphia. The Cleveland Worsted Mills Co., recently reported having purchased the Emerald Worsted Mills, will operate same as the Emerald Dept. They will install 5,800 new spindles, 3 sets woolen cards and 2 worsted cards, for making worsted yarns, 2/18 to 2/50. All the machinery of the Manningham Worsted Co. has been purchased by the above company and will be moved to the Emerald Mill.

*Pennsylvania, Philadelphia. The Arkonia Fabric & Mfg. Co., located in the Fretz building, is now in part operation. Twenty looms have been set up, ten of which are being run on serges and the balance to be operated on men's wear within a few weeks. It is the intention of this concern to remove their main plant, which is located in the East, to this city within a few months, and when this machinery is set up it will be operated on dress goods. The plant in this city is under the control of Mr. Albert Blackburn, who was formerly connected with Folwell & Bro., and who is now with the Arkonia Co. as one of its officers.

*Pennsylvania, Philadelphia. The Emerald Worster Mills have been sold to the Cleveland Worsted Mills of Cleveland, Ohio. The new owners will put the plant in operation at once. For the past five months the American Woolen Company has been operating the mill.

*Pennsylvania, Tunkhannock. The Winola Yarn Mill has been idle for the past few days owing to installation of the new machinery.

Rhode Island, Oakland. The Hope Worsted Mills are putting in 10 new Crompton-Thayer worsted looms which are expected to be in operation by the first of February.

*Rhode Island, Olneyville. The new building under construction for the Riverside Mills, and to be used as an office building, is nearing completion.

*Rhode Island, Peace Dale. The Peace Dale Manufacturing Co., reported installing 50 new looms in the plant, advises that they are replacing some old cones and adding to that number.

*Rhode Island, Providence. Work is well under way on the new buildings for the Wanskuck Co. The main building will be 306 by 72 feet, three stories, with an engine room 40 by 40 feet, one story. A 750 h. p. engine will be put in. The first floor will be used for finishing; the second woolen yarns and the third worsted yarns. It is expected that the new building will be ready for machinery about March 1.

West Virginia, Martinsburg. The Crawford Woolen Company has started work on erection of an addition, 100 feet long, to the mill. They have placed an order for looms with the Crompton-Thayer Loom Co.

Mills Starting Up.

*California, Napa. The Napa Woolen Mill will restart on making blankets and flannels, with Chas. H. Carter, formerly of Portland, Ore., in full charge. A specialty will be made of Vicuna blankets for the mining and logging trade.

*Delaware, New Castle. Operations will begin shortly in the New Castle Woolen Mills to be known as the Cromwell Woolen Mills. R. A. Rice will be superintendent of the plant.

*Maine, Guilford. Operations have begun in all departments of the Hussey Mills with a small force of operatives. The help will be rapidly increased until the plant is running to its full capacity.

*Massachusetts, Millbury. Operations will soon be resumed in the No. 2 Mill of the Mayo Woolen Co. after idleness of nearly a year.

*Massachusetts, Newton. The Nonantum Worsted Co.'s plant, recently damaged by fire, has been closed for an indefinite time. It has not yet been decided about rebuilding.

*Massachusetts, Uxbridge. The Hecla Mills are to resume operations Feb. 1st making yarns for the various mills of the American Woolen Company. This mill is equipped with 12 sets cards.

*New Hampshire, North Salem. Operations will be resumed about Feb. 1st in J. W. Wheeler & Son's mill, making yarns, for weaving and hosiery and blankets. This company makes a specialty of custom picking, carding and spinning.

*Pennsylvania, Delmont. The Delmont Woolen Mills are about ready to start up. Work has been started on an addition to the mill, 30 by 60 feet.

Mills Shutting Down.

Massachusetts, Hinsdale. It is reported that the Hinsdale Woolen Company's plant is closed and a rumor is afloat stating that the company is to be reorganized, owing to some members of the firm desiring to retire.

Massachusetts, Uxbridge. The Rivulet Mill has been closed for an indefinite time.

*New York, Rockwell's Mills. The machinery of the woolen mills, operated by Allen Rockwell, has been sold. There is no prospect of the plant resuming.

For Knitting Mill News, see Knitting Department.

SILK.

New Mills.

*Connecticut, Middletown. It is expected to have the Merchant's Silk Company's plant ready to start operations about February. This company is capitalized at $200,000, and is located in buildings formerly operated by the L. D. Brown & Son Silk Company. C. H. Emig, of York, Pa., is president of the company.

Connecticut Wauregan. The Wauregan Co. has placed a repeat order for humidifiers with the American Moistening Co., Boston, Mass.

*Massachusetts, Hopkinton. It is thought that the new plant of the Herminia Silk Mill will be ready to start operations early in the spring. The equipment is nearly all placed.

New Jersey, Paterson. The Star Silk Mill has been incorporated recently with capital stock of $5,000 by Harris Handman, Mendel Joelson and Harry Joelson.

Pennsylvania, Reading. James Smith of 220 Pearl St., has started up a plant for the embroidering of ladies' and half hose for the trade.

Pennsylvania, Siegfried. The Central Silk Manufacturing Company has been organized with capital by Catasauqua business men. A new building is nearly completed and will be equipped with the latest impproed machinery for making broad silks. Dr. W. Willoughby is president of the company and J. H. Frederick, manager.

*Rhode Island, Riverpoint. The Pawtuxet Valley Textile Company, recently reported incorporated with capital stock of $50,000, will manufacture lining satins, operating 50 looms. This company, of which Geo. F. Wright is president and buyer and Percy Wright, treasurer, will sell the product direct.

Enlargements and Improvements.

*Connecticut, Mystic. Contract has been awarded for the new addition to the Rossie Velvet Company's mill.

Connecticut, Norwalk. The Muller Gloria Mills are to build a large addition, 135 by 75 feet, to the plant. Work will start on the new structure as soon as possible. About 100 new looms will be put in.

New Jersey, Newton. Work will start shortly on erection of a drying house for the Valentine & Bentley Silk Mill.

*New Jersey, Paterson. The Metropolitan Silk Mills, reported several months ago as having purchased the Todd Jute Mills, have begun removing their equipment from the Addy Mills to the new location.

Pennsylvania, Avoca. The Avoca Silk Co. have started operations in the basement of the mill and installed quilling and reeling machines there.

*Pennsylvania, Kingston. Crane Bros. (of Tobyhanna) have started operations in their branch throwing mill established in buildings formerly occupied by the Anthracite Knitting Mills, which have discontinued business.

*Pennsylvania, Meadville. The Meadville Silk Mill has been removed to New Bedford, where a branch plant was located a short time ago and where the combined mills are being operated as the Barbour Silk Mfg. Co., Johnson Barbour, proprietor. They will have an equipment of 100 looms making broad and dress silks, sold through H. A. Caesar & Co., New York.

Pennsylvania, Parsons. An addition is under way to the Parsons Silk Mill. Additional help will be employel and capacity of the plant greatly increased.

*Pennsylvania, Scranton. Operations have been started in the branch mill of the Sauquoit Silk Manufacturing Co. at this place. Sixteen machines have been put in place and more will be put in later.

Pennsylvania, York. The York Silk Manufacturing Co. will build a 100 foot addition to the mill and will also add a modern finishing plant so that finishing may be done here.

Mills Starting Up.

*New Jersey, Paterson. The Anderson Bros. Silk Co. has resumed operations after being out of business, owing to financial difficulties, for some time. Work will be resumed in the Barnert Mill.

FAILURES AND SUSPENSIONS.

Illinois, Chicago. Frank H. Jones has been appointed receiver for the Phyllis Knitting Company, Jefferson Street. The assets of the concern are estimated at $55,000, with liabilities much larger.

New Jersey, Paterson. The Hurby & Holbach Co. has failed recently and William Schmidt, silk manufacturer of Paterson, has been appointed receiver. The business will be continued, the creditors favoring a compromise.

New Jersey, Paterson. Creditors of the Liberty Silk Co. in New York and New Jersey are to make application for a receiver for the plant. This concern operates a mill in New York City and a branch plant at Hornellsville.

New Jersey, Paterson. William Smith has been appointed receiver for Robbins & Cohen, silk ribbon manufacturers. The liabilities are estimated at about $15,000.

New Jersey, Paterson. Rosenthal Bros., operating a small silk plant in the Essex Mill, and reported last November as having made an assignment, have filed a voluntary petition in bankruptcy. Rayton E. Horton has been appointed receiver.

New Jersey, Paterson. A petition in bankruptcy has been filed by Herman Rosendale, manufacturer of silks. The liabilities are placed at $3,635, with assets of about $550.

New York, Hornellsville. Augustus H. Skillin has been appointed receiver in bankruptcy of the Liberty Silk Company, with mills at New York City and this place. The business will be continued for twenty days until some definite arrangement is made.

Vermont, Brattleboro. The Brattleboro Manufacturing Company has filed a petition in bankruptcy. The statement of the concern's affairs show assets of 14,000 and liabilities of about $74,000. The recent failure of Chas. H. Thompson, president of the company, is given as cause for company's bankruptcy.

FACTS AND GOSSIP.

California, San Diego. Louis J. Wildes, president of the American National Bank, is reported as interested in establishing a plant here for manufacturing taffeta silks.

Colorado, Denver. The Crucknell-Gerry Woolen Company has been incorporated with capital stock of $15,000. The incorporators are: M. Crucknell, Charles H. Crucknell and W. A. Gerry.

Connecticut, Hartford. The Robert Lewis Company has been incorporated with capital stock of $100,000 for purpose of manufacturing and selling textile fabrics. Robert Lewis and Frank E. Johnson are mentioned among the incorporators.

*Connecticut, New Hartford. Orders have been received whereby the machinery will be removed from the Greenwoods Company's mill, long since closed, and removed to the various mills of the Mt. Vernon Woodberry Cotton Duck Co. It is presumed that this is a preliminary step towards disposition or sale of the plant.

Connecticut, Willimantic. At a recent meeting of the directors of the Windham Silk Company, Frank Larrabee was elected to succeed H. C. Murray (resigned) as president of the company.

Delaware, Dover. The Southern Cloth Company has been reported incorporated with capital stock of $100,000 for manufacturing woolens and other fabrics.

Florida, Hawthorn. It is reported that R. L. Steele of the Rockingham (N. C.) Cotton Mills is interested in a project for establishing a cotton mill here.

*Georgia, Atlanta. A decree foreclosing the mortgage on the Atlanta Cotton Mills, held by the U. S. Mortgage & Trust Co., of New York, has been issued by Judge Newman of the United States District Court. It is ordered that if the debt is not settled before February, the property shall be advertised for sale by H. C. Fisher, who has been appointed special commissioner. These mills have not been running for two years.

*Georgia, Calhoun. J. M. Lang and O. N. Starr are reported as making arrangements for organizing a company with capital stock of $100,000 for establishment of a cotton mill here. It has not yet been decided what the equipment will be.

Georgia, Clarksville. The Porter Cotton factory was recently sold at auction and purchased by S. Y. Stribland (Boswell), Aubrey Motz (Atlanta), and Dr. Jeff Davis (Tocooa), who propose organizing the Habersham Mills and operating same. $100,000 is the proposed capital stock.

Georgia, Covington. At meeting held recently of the directors of the Covington Cotton Mills, J. H. Ledyard was elected to succeed L. D. Hines,

resigned, as president and general manager of the plant.

*Illinois, Chicago. The Aurora Wool Scouring Mills have removed the plant from Aurora, Ill., to this place. The mills are located at Elston and Webster Avenues, with office and salesroom, 146 Kinzie Street.

Illinois, Zion City. The Zion Lace Industries, which have been closed, have resumed operations in full.

'Maine, North Vassalboro. David Simpson has purchased an interest in the Edward Chase Shoddy Mill and will have charge of the card room.

Maine, Portland. The Alton Manufacturing Co. is reported as having been organized under Maine laws, with capital stock of $600,000, for purpose of manufacturing woven and knitted goods. Horace Mitchell (Kittery) is president of the new corporation and S. J. Morrison (Portsmouth, N. H.), treasurer.

Maine, Portland. The Novelty Rug Company has been incorporated for purpose of manufacturing rugs and carpets. The capital stock is placed at $10,000. Howard C. Hawkes (Portland) is treasurer.

Maine, Springvale. Jagger Bros. have been incorporated with capital stock of $50,000, to continue the plant of Jagger Bros. Samuel B. Jagger is president of the company and Frederick Jagger, treasurer.

Maryland, Baltimore. The Bellvue Mills Company, capitalized at $200,000, has purchased the property of the Southern Textile Company, recently bought in by the International Trust Company, of Baltimore, Md. This property consists of the Windsor, Chicora and Morehead Cotton Mills. W. H. Harriss (Atlanta), is president of the new company; P. H. Corr (Taunton, Mass.), vice-president, and T. Ashby Blythe (Philadelphia), secretary and treasurer. It is proposed to put the mills in operation at once. Product will be sold through the Textile Commission Co., 73 Worth St.

Maryland, Cumberland. The Klots Throwing Company is reported as contemplating erection of a branch silk mill at Lonacoming.

Massachusetts, Blackinton. The weave room at the Blackinton Mill is being operated three nights a week.

Massachusetts, Boston. The date for the spring meeting of the New England Cotton Manufacturers' Association has been fixed for April 25th and 26th. This meeting promises to be of more than usual importance as delegates from the other associations will be present, including a representative of the International Cotton Manufacturers' Association.

Massachusetts, Canton. The Eureka Silk Manufacturing Company is reported to remove the property to Putnam, Conn.

Massachusetts, Fall River. The Narragansett Mills have placed an order for the extension of their humidifying system with the American Moistening Co., Boston, Mass.

Massachusetts, Fitchburg. The Grant Yarn Co. has placed a repeat order for humidifiers with the American Moistening Co., Boston, Mass.

*Massachusetts, Hyde Park. The affairs of Robert Bleakie & Co.'s mills are approaching a final settlement. The estate is being closed. It is considered certain that the mills will not again be operated under the same management as Robert Bleakie, the surviving partner, does not wish to re-enter active business life. It is understood that other parties may take hold of the plant and start it up when the affairs of the old company are adjusted.

Massachusetts, Lawrence. Operations have been resumed in full in the E. F. Lewis wool scouring and carbonizing mill, which has been idle for some time owing to shortage of wool.

Massachusetts, Lawrence. It is reported that the Arlington Mills may discontinue the Atherton plant at Tewksbury on April 1st.

Massachusetts, Methuen. Elmer E. Talbert is now president of the Tekcips Dyeing & Finishing Co. and J. D. Price is treasurer.

*Massachusetts, North Adams. Work is being done at the Windsor Print Works, preparatory to resuming operations soon. This property was recently purchased by J. & S. Ferguson, of 15 William Street, New York City, who are organizing a new company.

Massachusetts, Taunton. The Whittenton Manufacturing Company is reported to discontinue manufacturing dress goods and will devote more attention to flannelettes.

*Massachusetts, Wales. The Avon Woolen Mills have been incorporated with capital stock of $30,000 by Joseph H. Loudon, John W. Luce, George H. Priest and others.

Massachusetts, Winchester. The Chas. W. Bacon Felt Works for the manufacture of felts, wadding, etc., has just been incorporated with a capital of $25,000. The officers are Fred Bogue, president; W. S. Lee, treasurer.

Massachusetts, Worcester. It is reported that N. Pemstein has purchased a building in which he will install machinery for manufacturing wool waste.

*Minnesota, Faribault. F. L. Klemer is president and superintendent of the Faribault Woolen Mill Company, recently incorporated with capital stock of $100,000 to succeed C. H. Klemer & Sons. H. F. Klemer is treasurer of the concern. This mill is equipped with 2 sets cards and 13 looms. Goods are sold through S. M. Merrill Co., Minneapolis.

Minnesota, St. Paul Park. The Union Mills have been incorporated with capital stock of $100,000, for the purpose of manufacturing flax fibres. Mahlon D. Miller is president of the company.

Mississippi, Wesson. A reorganization of the Mississippi Mills is under way. Messrs. Faulkner, Page & Co. of New York, the selling agents for the mill, have taken the management for the present. Mr. J. S. Rea, secretary and treasurer, has tendered his resignation. This mill makes both cotton and woolen goods, having 62 broad and 158 narrow woolen looms and 600 cotton looms.

*Missouri, Kansas City. A recent report states that the new mill projected by the Kansas City Cotton Mills Company will be in operation within six months and that work will start at once on altering the buildings formerly used by the Alcutt Packing Company, to be used for the purpose. An equipment of 10,000 spindles will be installed.

*New Hampshire, Claremont. The new dam under construction by A. Roberts & Co. has been swept away recently, causing loss of several thousand dollars. This will be somewhat of a hindrance as they proposed utilizing power from this source this spring.

*New Hampshire, Lebanon. We have been advised by M. E. George, formerly superintendent at the Northfield Woolen Mills, that he has not yet made any definite decision regarding the future. Nothing will be done by him until after having a much needed rest, when he contemplates engaging in some light manufacturing or mercantile business, in all probability manufacturing.

New Hampshire, Newport. It is reported that a woolen mill is to be established here and that the old shoe factory on River Street has been purchased for the purpose. Col. Seth M. Richards is mentioned as interested.

*New Jersey, Bound Brook. Henry L. Einstein is president of the Bound Brook Woolen Mills, recently incorporated; William Einstein, treasurer, and David Hastings, secretary.

New Jersey, Camden. The Bellevue Mills Co. has been incorporated with capital stock of $200,000, to make textile fabrics. Robert J. McKeowan and W. B. Wolcott are among the incorporators.

New York, Cohoes. At recent meeting of the stockholders of the Peerless Fibre Co., Louis Baere was elected president; Emanuel Baere, vice-president, and Jacob Baere, secretary and treasurer.

New York, Johnstown. The Hartmann-Schneider Co. has been incorporated with capital stock of $25,000. John P. Hartmann and Jos. A. Schneider are among the incorporators.

New York, Little Falls. The Little Falls Felt Shoe Co. has been incorporated with capital stock of $50,000, by I. E. Stacey, John O'Rourke and F. F. Stacey.

New York, New York. The Twinen Manufacturing Company has been incorporated with capital stock of $15,000 for manufacturing fabrics. Joseph Twinen and Geo. Duble are mentioned as among the incorporators.

New York, New York. On Monday the American Woolen Co. opens its staple lines of worsteds. This has an important bearing on the heavy weight season. The outlook is for an unprecedently large trade in those lines of goods.

New York, New York. It has been learned here that Marshall Field & Co., Chicago, Ill., one of the largest jobbing houses in the country, in order that they may place upon the market their special lines of hosiery, are sending out to the various manufacturers an announcement to the effect that they are ready to contract for hose and half hose in the gray; they (Marshall Field & Co.) having the dyeing and finishing done and shipping the goods to their customers under their own name and brands.

New York, New York. James McCartney & Co. has been incorporated with capital stock of $5,000 to manufacture silks and cottons. James McCartney and Andrew Leone are among the incorporators.

New York, New York. The Bernstein Ribbon Co. has been incorporated with capital stock of $30,000, by Elias Summerfield and J. H. Eckstein.

New York, New York. Innis & Co., manufacturers and dealers in dyestuffs and chemicals, are to incorporate as Innis, Speiden & Co. Georve V. Sheffield will be treasurer and C. C. Speiden and M. Speiden, hitherto associated with A. Klipstein & Co., will be directors.

North Carolina, Cumberland. J. Frederic Houston & Co., who a year or so ago took over the Cumberland Cotton Mills, which they have re-equipped and enlarged in a very extensive manner for the manufacture of cotton warps, skeins, tubes or cones, report that business with them is good. They have just opened up a branch office in Boston, Mass., the main office of the company being located in the Provident building, Philadelphia.

North Carolina, Maiden. The Maiden Milling & Manufacturing Company has been incorporated with capital stock of $25,000 by C. F. Williams and others. It is proposed to equip and operate a hosiery mill.

*North Carolina, New Berne. The Blades Hosiery Company has not yet decided about rebuilding the plant and it is doubtful if it ever will be.

Ohio, St. Mary's. The St. Mary's Woolen Manufacturing Company has increased the capital stock to $125,000.

Ontario, Dresden. It is reported that a concern, represented by A. H. Turner of Toronto, proposes establishing a plant for manufacturing cordage from flax provided suitable arrangements can be made.

Ontario, Dunnville. It is reported that a new rug mill is under construction at this place. Outside capital is interested.

Ontario, Hamilton. The Eagle Spinning Co. has been incorporated with capital stock of $250,000 for purpose of manufacturing yarns. J. R. Moodie, R. R. Moodie, James Moodie are among the incorporators.

*Oregon, Albany. Messrs. Chas. Coopey and H. M. Grant, of Portland, Ore., are the principal movers in the project under way for establishing a woolen mill here with capital stock of $100,000. A manufacturer from the East has also become interested in the enterprise. $15,000 is to be subscribed locally toward erection of the new buildings, the main building to be about 200 by 50 feet, three stories. A six set mill is proposed. It has not yet been definitely decided what will be manufactured. There is also a possibility that a knitting mill will be operated in connection with the plant.

Maryland, Baltimore. Contract has been awarded for an addition to Frank C. Wachter's cloth sponging plant, 211 W. German Street.

*New Jersey, Fairview. The Bellman Brook Bleachery Co. has been incorporated with capital stock of $300,000. Benj. I Ward is president and treasurer of the company; Geo. W. Van Keuren, treasurer. Plant will be operated by steam.

*New York, Little Falls. The Little Falls Felt Shoe Co., recently reported incorporated with capital stock of $50,000, will start operations about Feb. 1st in new mill recently built. Irving E. Stacey is president of the company, Frank E. Stacey, treasurer, and Gustav A. Freygang, superintendent. Plant will be equipped with electricity. Felt shoes and slippers will be made.

Pennsylvania, Philadelphia. John Kaye is proprietor of the Wyoming Dyeing & Finishing Works which will start operations shortly at 109 W. Wyoming Ave. Will dye cotton cloth in the piece, including ginghams, etc.

Pennsylvania, Schuylkill Haven. Samuel Rowland, bleacher and dyer, has met with wonderful success during the past year. He has quite recently purchased the plant of the Columbia Bleaching & Dye Works, which he will operate in addition to his old plant, the Schuylkill Haven Bleach and Dye Works. He is very busy in all his departments.

Pennsylvania, McDonald. It is reported that the Pittsburg Woolen Mill Co., whose plant was recently destroyed by fire, has made a proposition to locate here, provided their terms are accepted. The proposed new mill is to employ from 25 to 30 people at first.

Pennsylvania, New Cumberland. The Pennsylvania Dye & Bleach Works, which was started up about a year ago, reports that they are actively engaged in dyeing and bleaching hosiery, underwear, yarns, etc., and making a specialty of Sanitary Fast Black, for which they are receiving a good business.

Pennsylvania, Philadelphia. The five-story factory and boiler house, 500 by 140 feet, extending from Indiana to Clearfield St. and from A to Ella St., in which the Bromley Worsted Spinning Co. is located together with several other manufacturers of textile fabrics, has been sold by Thomas Bromley, Jr. to James Dunlap for a nominal consideration, subject to a $112,500 mortgage. The assessed valuation is $80,000.

Pennsylvania, Philadelphia. The firm of Hoffman, De Witt & McDonough have changed into a stock company and in the future will operate under the company name Hoffman, De Witt & McDonough Co. They manufacture a line of tapes, webbings and bindings. The change takes place the early part of January.

Pennsylvania, Philadelphia. The Leicester & Continental Mills Company, Germantown, manufacturers of knit goods, has removed its local office and salesroom to the Metropolis Building, 31 Union Square, New York. A. Sonderhof will be in charge of the fancy knit goods department.

Pennsylvania, Sayre. E. W. Baer (president of the Lehighton Silk Mill), and W. S. Hofford, have been conferring with business men of this place relative to establishing a silk mill here. The Business Men's Association is considering the matter.

Pennsylvania, Schuylkill Haven. About four years ago Messrs. Saul & Zanz started up in the manufacture of paper boxes in this city and their business has increased steadily ever since. About two and a half years ago they started a branch factory at Hazleton, Pa. They manufacture paper boxes of all kinds but make a specialty of boxes for the knitting trade.

Pennsylvania, Taylor. The explosion of a boiler at the Taylor Silk Mill has caused considerable damage. The boiler house has been demolished.

Pennsylvania, White Haven. The Whitehaven Silk Co. has adopted he American Moisening Co.'s sysem of humidifiers.

*Rhode Island, Drownville. Work is well under way on the new mill for the Frost Finishing Company.

Rhode Island, Pascoag. It is reported that Samuel Mellor and Paul A. Schwartz, the latter of Harrisville, are interested in erecting a new plant here for making woolen and worsted goods. A company is proposed to operate same.

Rhode Island, Pawtucket. The F. H. Shoals Company is to be incorporated with capital stock of $45,000 for purpose of making elastic and non-elastic fabrics, i. e., tapes, webbings, braids, suspender and garter elastics, etc.

*Rhode Island, Woonsocket. Charles Tiberergh-ien of Tourcoing, France, is said to have renewed his proposition to locate mill at this place if the city council will offer inducements, viz.: exemption from taxation. If same is secured work will start about March on the erection of a large combing mill.

Rhode Island, Woonsocket. Dr. E. J. Auge has disposed of his interest in the New England Dyeing & Bleaching Company. George N. Girard is now associated with Max Job in the company.

South Carolina, Yorkville. W. B. Moore is reported as interested in establishing another cotton mill at this place, the new plant to be operated by electricity.

Virginia, Roanoke. Frank E. Brown is mentioned as interested in a project under way for organizing a company with capital stock of $40,000 to establish a woolen mill here. It is stated that the Fincastle Mill will be removed here and additional machinery added.

Wisconsin, Milwaukee. The Reinhart Mitten Company has been incorporated with capital stock of $75,000 by Charles F. Reinhart, James Kreil, Wm. P. Goehrig and Geo. H. Goehrig.

Personals.

Geo. F. Shepley of Providence, R. I., was elected a director of the American Woolen Co. to take the place of Jas. Phillips, Jr., of New York, who has resigned because of other interests which render him unable to attend the meetings of the board. Mr. Shepley is ex-governor of Rhode Island, vice-president of the Manufacturers' Trust Co. of Providence and holds other offices.

William Wilson, formerly manager of the Halifax Cotton Mill, Halifax, N. S., has retired from mill business and has been succeeded by his brother, Geo. Wilson, who is manager of the Winsor Mill and who will now have charge of both.

W. P. Ogden, of Waterbury, Conn., has secured a position with the Scoville Mfg. Co., Bristol, Conn., as assistant in the purchasing department.

Woodward Trainer, formerly superintendent of the Standard Spinning Co.'s Mills, Chester, Pa., has accepted a position with Dick Bros., bankers and brokers in Philadelphia, in the cotton brokerage department.

Henry H. Merriman has retired from business after 40 years' continuous service with the Crompton & Knowles Loom Company and its predecessors.

Robert S. Donaldson has resigned as superintendent of the Laconia division of the Pepperell Mills, Biddeford, Me., and has been succeeded by Ernest L. Morrill who has been acting as overseer of spinning.

W. B. Burton, formerly superintendent of the Orient Mills, Charlotte, N. C., has taken a similar position with the Manetta Mills, Lando, S. C.

Walter F. Slade, superintendent of the Standard Worsted Mill, Providence, R. I., has resigned.

J. A. Green, for several years superintendent of the Springstein Mills, Chester, S. C., has accepted a similar position in a twine and rope factory in Kentucky.

W. P. Barnes, formerly superintendent of the Rushton Cotton Mills, Griffin, N. C., is now manager of the Hope Mills Mfg. Co., Hope Mills, N. C.

Geo. Spencer is the new designer at the Knoxville Woolen Mills, Knoxville, Tenn., taking the place of Owen McMahon, who has accepted a position with the L. W. Smith Woolen Co., Bridgeport, Pa.

Joseph Hargreaves, formerly with the Altamahaw Cotton Mills, Elon College, N. C., has resigned.

Chas. Francis of Pawtucket, R. I., has been appointed overseer of weaving at the Farwell Worsted Mill, taking the position formerly held by Chas. F. Hacking, who has been with the company since the mill started six years ago, and who has taken a similar position in the Saranac Mill, Blackstone, Mass., succeeding Edward H. Heine.

Peter Flynn, superintendent of the Hamlet Textile Co., Woonsocket, R. I., has resigned. The overseer of weaving, Edward Fuller, resigned also and his place has been supplied by Edward Wooley, who will also perform part of the duties of the former superintendent.

W. C. Hall, formerly with the Cochohocken Woolen Co., has accepted a position as finisher for the Warrenton Woolen Co., Torrington, Conn.

Joseph Costine has accepted a position as finisher for the Bay State Worsted Co., Worcester, Mass.

F. C. Bennett, overseer of finishing for the Sheridan Woolen Mills, Ashuelot, N. H., died recently.

Samuel H. Walker, who has been overseer of the bleaching department of the Saylesville Bleacheries for the past three years, has resigned to accept a position as superintendent of a bleachery in Fairview, N. J. John F. Bannon succeeds him.

Thomas Jewett, expert dyer of warp, has accepted a position with the Hamilton Woolen Co., Southbridge, Mass.

Roderick Chisholm, overseer of dyeing at the Capital City Woolen Mills, Des Moines, Iowa, has resigned.

P. A. Green, formerly of Warren, R. I., has accepted a position as overseer of spinning and spooling with the Pittsfield Mills, Pittsfield, N. H.

Geo. B. McCracken has accepted the position of master mechanic left vacant by the resignation of Henry Titus at the Windham Mfg. Co., Willimantic, Conn. Mr. Titus has taken a similar position at the Eagleville Mill. George Grimes, a former machinist at the Windham Co.'s mill has returned.

L. Aitken has accepted a position as master mechanic for the Lawrence Duck Co., Lawrence, Mass.

James Kilburn, formerly of the Dartmouth Mill, New Bedford, Mass., has been engaged as master mechanic by the Grant Yarn Co., Fitchburg, Mass.

Edward J. Wall, formerly of Winooski, Vt., has accepted a position as overseer of dressing, spooling and twisting for A. Roberts & Co., Claremont, N. H.

James B. Jones, formerly with E. F. Houghton & Co., of Philadelphia, has entered into partnership with the Philadelphia Textile Chemical Works, manufacturers of textile soaps and chemicals, with offices and works at Frankford, Philadelphia, Pa.

Geo. P. Newell, superintendent of the Greenville Woolen Mills (R. I.), has been appointed agent of the Livingston Worsted Mills, Washington, R. I., to succeed Joseph Dews.

Edmund Corcoran, agent of the Fitchburg and Beoli Mills of the American Woolen Co., has resigned to accept a similar position with the Shackamaxon Worsted Co., Philadelphia, Pa.

James Jackson, who has been employed by the Oakland Mills (R. I.) for the past 36 years as mule tender, has resigned to accept a more lucrative position in Attleboro.

S. W. King of Sylacauga, Ala., has gone to the Arcade Cotton Mills, Rock Hill, S. C., as overseer of carding.

C. R. Lockman, formerly with the Kesler Mfg. Co., Salisbury, N. C., has accepted the position as assistant superintendent with the Gastonia Cotton Mfg. Co.

A. W. McAllister, for many years superintendent of the Natick Mills at Natick, R. I., has resigned his position.

W. M. McCarthy, Lawrence, Mass., has been appointed overseer of carding nights at the Brigham Woolen Mills, Dayville, Conn.

C. H. Phillips has resigned as superintendent of the Spray Cotton Mills, Spray, N. C., and taken a similar position with the Minneola Mfg. Co. at Gibsonville, and W. A. Woods, of the last named company, has gone to the Delgado Cotton Mills, Wilmington, N. C.

Emil Wilde succeeds Wm. Crane as overseer in the shipping department of the Washington Mill, Lawrence, Mass. He has been with this company for the past 15 years in different capacities.

Park Reed, who has for a number of years been loom fixer in the Niantic Mfg. Co.'s mills, Connecticut, has been promoted to overseer of weaving. The loom fixers are James and Levi Tucker. The place of boss machinist formerly filled by James Park, who left some time ago with his brother for Stafford Springs, has been filled by William Warren of Meriden, Conn.

John S. Roberts, formerly of the Cannon Mill, Concord, N. C., has taken the position of superintendent left vacant by Joseph Hargreaves at Elon College, N. C.

E. A. Russell has accepted the position as second hand in the card room, under Thos. J. Kelley, Ludlow, Vt.

Chester Sandel, who has held the position of overseer of dressing at the Zanesville Woolen Mills, Zanesville, Ohio, for the past three years, has resigned.

B. Webber, overseer of carding at the Nourse Mill, Woonsocket, R. I., has accepted a position to superintend the Nottingham Mill, Providence, R. I., while Jas. McFadden, who formerly held this position, has accepted a similar one with the Natick Mills (R. I.).

W. H. Wilcox, overseer of carding, has again entered the Aetna Mill at Watertown, Mass., a position which he filled for over two years.

Arthur E. Benson, of New Bedford, Mass., has accepted the position of superintendent of the Colwell Worsted Mills, Providence, R. I.

Philip Bond, superintendent of the cotton warp mill of the Hamilton Woolen Co., Globe Village, Mass., died recently after a short illness. He had worked continuously for the Hamilton Woolen Co. for more than fifty-four years.

John W. Conley has accepted the position of overseer of spinning at the Crown Mills, Marcellus, N. Y.

J. S. Cromer has resigned as overseer of weaving at the Arcadia Mills, Spartanburg, S. C., to become superintendent of the Tucapau Mills Co. at Wellford.

J. O. Doggett is to be the overseer of carding at the Seneca (S. C.) Cotton Mills.

John E. Dowd of Hillsboro Bridge, N. H., has gone to Worcester, Mass., to take charge of the finishing department of the Worcester Woolen Mill Co.

Charles Francis of Pawtucket, R. I., is to be superintendent of the Farwell Worsted Mills, Middleboro, Mass., in the place of Charles F. Hacking, resigned.

James Hannah, employed in the dyeing department of the Parkhill Mfg. Co., Fitchburg, Mass., for the last six years, has gone to the Lowe Mfg. Co., Huntsville, Ala., as overseer of dyeing.

Hugh Waddler, for the past five years assistant engineer for the Broad Brook Co., Broad Brook, Conn., has resigned.

James Green has accepted a position as third hand in the weave room of the Hathaway Mill, New Bedford, Mass.

Frederick Aspinwall, formerly cloth inspector in the Riverview Worsted Mills, Waterville, Me., has accepted a similar position in the Norwalk Mills, Winnepauk, Conn.

David Menzies, formerly dresser tender for E. Kenyon & Son, Kenyon, R. I., has accepted a similar position in the Riverside Mills, Providence, R. I.

Elmer Cody has accepted a position as loom fixer for the Knox Woolen Co., Camden, Me.

Matthew Faulds, a weaver of Kilmarnock, Scotland, has been at his loom eighty years. He is 99 years of age.

Joseph Nuttall, boss grinder at the Danielsonville Cotton Mill Co., has resigned, and his position has been filled by Louis Brooks of New Bedford, Mass.

George Arsenault has accepted a position as second hand in the carding room of the Forestdale Mills, Forestdale, R. I.

Wm. J. Brennan, who has held the position of third hand in the spinning room for the Lonsdale Co., Ashton, R. I., has accepted a position as assistant overseer in the Fales Co.'s Mills, Norwich, Conn.

Russell C. Rouse has resigned his position as second hand in spinning room of the Williamsville Mfg. Co., Killingly, Conn.

John Seave has accepted a position as second hand of spinning at the Rock Mfg. Co.'s mill, Rockville, Conn.

Abraham Hey, overseer of weaving at the No. 1 mill of the Dunn Worsted Mills, Woonsocket, R. I., was presented with a beautiful oak roll-top desk as a Christmas gift, by his employes.

H. J. Pollitt, superintendent of the George Sykes Woolen Mills, Reynoldsville, Pa., has resigned and has taken a similar position at the Brookville Woolen Mills, Brookville, Pa.

L. J. Saxton has succeeded Alvin J. Smith as superintendent of the Clinton Woolen Mills, Norwich, Conn. Mr. Saxton has been connected with this company for the past 30 years as bookkeeper and paymaster, which position will be filled by his son, L. Henry Saxton.

James M. Masson, formerly superintendent of the Concord Mfg. Co., Penacook, N. H., has accepted a position as agent and superintendent of the Indian Spring Woolen Mills, Madison, Me., to succeed Robert G. Henderson.

C. E. Manock, who has been for a number of years past agent for the R. W. Lord's Mill at West Kennebunk, Me., and before that in charge of both woolen and cotton departments of the Damon Mill at Westvale, Mass., since gone out of business, has taken the position as superintendent of the mill of C. M. Davis & Co., at Northfield Falls, Vt.

M. Glennon, superintendent for the past two years of the Bay State branch of the American Woolen Co., at Lowell, Mass., has severed his connection with that company and will be succeeded by Wm. Lasbury, formerly agent of the Broad Brook Woolen Mills of Connecticut.

F. B. Emery, son of Frank L. Emery, Concord, N. C., has been engaged as superintendent of the Ashcraft Cotton Mills, Florence, Ala.

Frank Dunham, superintendent of the spinning department of the Holland Mfg. Co., Willimantic, Conn., has resigned. He has been with this company for nearly 30 years.

Ernest Fearnley, who has had charge of the spinning, nights, for the Oakland Woolen Mills, Oakland, Me., has resigned.

John Casey, formerly overseer of spinning at the Otter River Mills (Mass.), has accepted a similar position at South Royalston, Mass.

P. J. Conley, overseer of weaving for the Thos. Kent Mfg. Co., Clifton Heights, Pa., has been succeeded by Edward Delmage, of Lowell, Mass.

Henry Rohlm, of Providence, R. I., has accepted a position with the Warren Woolen Co., Stafford Springs, Conn., as overseer of weaving.

I. T. Prosser, formerly of Manchester, N. H., has accepted a position as overseer of weaving in a mill at Suncook, N. H.

George H. Thomas, formerly of the Nashua Valley Mills, Clinton, Mass., has accepted a position as overseer of carding for the Peace Dale Mfg. Co., succeeding M. E. Sargent, resigned.

Mr. Gradwell, for many years boss carder in the Quidnick Cotton Mills, has resigned.

E. G. Taintor, of Lowell, has accepted a position as overseer of finishing for the Yantic Woolen Mills. Yantic, Conn.

E. H. Pero, recently with the Provo Woolen Mills, Utah, has accepted a position as overseer of finishing with the Portland Woolen Mills, Oregon.

Jas. T. Patterson, formerly overseer of finishing for the Swift River Co., Smiths, Mass., has resigned to accept a position in the Washington Mills, Lawrence, Mass., and is succeeded by Geo. N. Biddles, of Potter Hill, R. I.

D. G. Marley has returned to his old position at the Baltic Mills, Enfield, N. H., succeeding Henry C. Templeton, the late finisher.

Mr. Dunlap, recently from England, has taken the position of overseer of dyeing with the Hind & Harrison Plush Co., Clark Mills, N. Y. Mr. Scott, who has held this position for the past 8 years, is about to return to his home in England.

Thos. Callahan and Andrew Graham, of Pittsfield, Mass., have accepted positions in the finishing room of the Aetna Mills, Watertown, Mass., under Mr. Birkenshaw, the overseer.

Roderick Chisholm, formerly of Des Moines, Iowa, is now overseer of dyeing for the Buell Mfg. Co., St. Joseph, Mo. He is succeeded by James Farnell, who was formerly with the Thomas Kay Woolen Mills, Salem, Oregon.

James Barrington, who has been second hand in the dye house of the Jersey Cloth Co., Methuen, Mass., has been promoted to overseer's position.

The overseers at the Stockton Mill, Stockton, Cal., are Geo. W. Tatterson, superintendent and manager; Arthur W. Tatterson, assistant superintendent; John Jordan, boss weaver; John Murray, boss dyer; Geo. Powell, boss spinner; Delbert Hart, boss carder; Wm. Strike, boss finisher; W. Millen, engineer; F. Distan, master mechanic; Geo. Keen, second hand carder.

Dallas A. Alderman, who has been second hand in the carding department of the Renfrew Mfg. Co., Adams, Mass., has resigned his position to enter some other business.

Maurice Allen, formerly of Wilton, Me., has accepted position as night overseer of carding and spinning for the Riverview Worsted Mills, Waterville, Me.

David Anderson, who has had charge of the packing, shipping and making room of the Manville Co.'s mill (R. I.) for the past five years, has resigned to accept a similar position with the Hampton Co., East Hampton, Mass.

J. A. Asbel has resigned as carder and spinner at the Social Circle Cotton Mill (Ga.) to go as superintendent to the Hamburger Cotton Mills at Columbus.

Wm. Batten, for several years overseer of carding and assistant superintendent of the Barker Mill at Auburn, Me., has left his position to go on the road for the Batten-Hayes Co.

A. P. Brown of Lawrence, Mass., has accepted a position as overseer of spinning for the Exeter Mfg. Co., Exeter, N. H., taking the place of A. C. Burns, resigned. E. N. Fuller of Woonsocket, R. I., takes the position of overseer of weaving formerly held by James Garvin, resigned.

Daniel L. Carey has accepted a position as overseer of carding with the Sykes Woolen Mill Co., Reynoldsville, Pa.

John E. Dowd has taken charge of the finishing at the Worcester Woolen Mills Co.

Thomas F. Malloy, formerly of Little Falls, N. Y., has been engaged as foreman knitter by the United States Robe Co., Corunna, Mich.

Moses Topham, formerly overseer of dressing at Penacook, N. H., has accepted a position in the same department with the American Woolen Co. at Enfield, N. H.

Fred Hughes has accepted a position in the spooling department at Taconic Mill, Pontoosuc, Mass., and Samuel Labriski has taken a position in the card room at the Pontoosuc Mill.

M. E. George, who has been superintendent of the woolen mills of C. M. Davis & Co., Goulds-ville, Vt., has resigned and gone to his home in Lebanon, N. H., where he intends to establish a business of his own.

Geo. W. Gifford has accepted a position as master mechanic for the Clearwater Bleaching and Mfg. Co., at Clearwater, S. C. He was formerly at Putnam, Conn.

Charles F. Hacking, for the last twenty years overseer of the weaving department in the Farwell Worsted Mills, Middleboro, Mass., has resigned his position there to take a similar one with the Saranac Mills of the American Woolen Co. at Blackstone. On leaving the Farwell Mills the employes under him gave him an easy chair, a gold watch chain and a pair of gold link cuff buttons.

Edward H. Heine, formerly overseer of weaving at the Saranac Mill, Blackstone, Mass., has accepted a similar position with the French River Textile Co., Mechanicsville, Conn. This position was formerly held by Paul Wetstein.

Mr. R. G. Henderson, agent of the Indian Spring Woolen Co., Madison, Me., has resigned. Mr. Henderson has held the position of boss weaver, assistant superintendent and agent for nearly 15 years, and for the past 13 years he has been agent. During his administration here, Mr. Henderson has made the "Indian Spring" one of the finest equipped woolen mills in the state, and was held in the highest esteem by all his employes. Saturday, before leaving, Mr. Henderson was escorted from the office to the shipping room by a committee, and presented with an elegant roll top desk and office chair as a token of the friendship and esteem of his help. He was deeply affected by this manifestation of regard, but they were not done with him, for in the evening the overseers and office force, with their wives, called at his home, and presented him with a massive leather chair. Mr. Henderson feelingly responded. It came as a complete surprise to him. Ice cream and cake was served by the ladies, after which the evening was spent with music and games. The knowledge that he would no longer be with them had a saddening effect on one and all, himself included. They had all been together for years and enjoyed the closest of relations. At a late hour the guests departed for their homes, feeling that the evening had been as enjoyably spent as it could have been under the circumstances. Mr. Henderson leaves here with the best wishes of his friends. He is going to take charge of the Passaic Woolen Co.'s mill at Passaic, N. J.

A. Eugene Michel recently entered the employ of the Geo. H. Gibson Co., advertising engineers, Park Row building, New York city, having resigned as assistant advertising manager of the Standard Paint Co. Mr. Michel is a graduate of Rose Polytechnic Institute and his professional experience includes two years in the engineering department of the Diamond Chain Works of the Federal Manufacturing Co., charge of the testing department of the Ewart Mfg. Co., and the assistant managership of the department of publicity of the International Steam Pump Co., under Mr. Gibson.

Deaths.

John Oldfield, formerly connected with the textile machinery business, died at his home, 15 Beacon St., Everett, Mass., recently. Mr. Oldfield was 67 years of age and the son of Mr. Oldfield of the firm of Oddy, Oldfield & Co., of Salford, Manchester, Eng., and learned his business as a practical machinist in the building of fine cotton machinery. Later he held an important position with Hetherington & Co., Manchester, Eng., and later was for several years their American representative. He leaves a widow, four sons and three daughters.

James M. Follansbee, a well known woolen manufacturer, died recently at the City Hospital, Worcester, Mass. He was taken ill suddenly and for the first time in 40 years required medical attendance. He was 80 years of age.

William Taylor, of Easthampton, Mass., died recently at his home on Pleasant St. Mr. Taylor has been connected with the textile business since 1885 and at the time of his death was president and manager of the National Felting Co. He was 55 years of age, and leaves a widow.

F. C. Bennett, overseer of finishing at the Faulkner & Colony's Mill, Keene, N. H., died recently. He was 32 years of age and married.

James Gee of Delawanna, N. J., at one time considered the foremost dyer of this country, died recently at his home. He was 59 years of age, had lived in and about Passaic for 25 years and had been connected with some of the best dyeing establishments. Until a few days before his death, he worked in the Waldrich Bleachery.

George Young, expert machinist employed by the Howard & Bullough Co., Pawtucket, R. I., was killed recently in the card room of the Quidnick Co.'s mill while engaged in moving a heavy drawing frame. Mr. Young was 40 years of age, and leaves a widow and three children.

Samuel Lucas, formerly connected with the woolen manufacturing company of B. Lucas & Co., of Poquetanuck, Conn., died recently at the age of 80 years.

David McTaggart, formerly engaged in the woolen business, died January 13, at Barre, Mass. He was born in Glasgow, Scotland, about 63 years ago, and came to this country when quite young. He was engaged in the woolen business until 1892, when he closed his mill in Rockville and formed the Worcester Warp Compressor Company, for the manufacture of a warp compressing device that he had patented. He is survived by a wife, one son and four daughters.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Cotton Spinning and Manufacturing in the United States of America; by T. W. Uttley. B. A. Sherratt & Hughes, Manchester, England. Price, $1.00.

This is one of the Gartside reports to the University of Manchester. The Gartside scholarships were established in 1902, by John Henry Gartside of Manchester. About three are awarded each year to students of British nationality. Every Gartside scholar devotes a certain part of his time to the examination of subjects bearing on commerce and industry in Germany, Switzerland or the United States, and in addition to other requirements each scholar must present a report of the subjects that he has had under examination. The report by T. W. Uttley is of special interest to American readers. It is the result of observations by a foreigner, who is free from the prejudices that are likely to surround an American observer of American conditions.

The first chapter is devoted to Lawrence, Mass., and includes references to the nationalities among the Lawrence operatives, a comparison of plain and automatic looms, rents, costs of living, supplies of cotton and comparison of wages with those of New Bedford. In the chapter on Lowell there is an account of the Lowell boarding houses, where the variety of the bill of fare astonished the author. There are also interesting chapters on Burlington, Vt., New Bedford and Fall River, Mass., after which the South comes in for a share of attention. The author seems to have had a large share of success in gaining access to Southern mills and securing the information regarding subjects that are generally withheld from the knowledge of the outsider. Especially interesting are the comparisons of the plain and automatic looms in the South, in which is given a detailed statement of the various items entering into the problem, the results being favorable to the automatic loom.

The Cotton Industry and Trade; by S. J. Chapman, M. A.; 171 pages, 5 by 7 1/2; Methuen & Co., London. Price, $1.25.

The high standing of the preceding works of this author has been fully maintained in this, his latest production, which is intended as an elementary introduction to the economics of cotton manufacturing and trade. Although he has endeavored to make the work chiefly descriptive, it contains much reasoning that leads to the well-known conclusion of the author in favor of free trade. Beginning with a chapter on raw material, which contains a lukewarm endorsement of colonial cotton growing, the author traces the development of the cotton industry, gives an account of the British trade and foreign tariffs, conditions in the European trade, and concludes with a chapter on America and the East. The busy manufacturer and trader will find this book of great value because of its conciseness and clearness of statement and admirable arrangement of subjects.

The Student of Dyeing and Examinations in Chemistry (Der Faerberlehrling im Chemie-Examen), by Dr. A. Kielmeyer; A. Ziemsen, Wittenberg, Germany. 270 pages. Price $1.50.

This work consists of a series of questions and answers relating to the chemistry of dyeing and calculated to cover the ground thoroughly included in examinations of chemistry in German technical schools. The work will prove of great value to American students in two ways: First, by reason of the information which it contains, and second by the practical knowledge of technical German which the reader of this book will gain. Several years ago, Theodore C. Search, the president of the National Association of Manufacturers, in his address to the students of the Philadelphia Textile School, advised them to become conversant with technical German in order to gain access to the vast store of knowledge accumulated by German chemists. A study of this work will be an aid in carrying out that excellent suggestion.

Practical Textbook on Worsted Spinning (Praktisches Lehrbuch der Kammgarnspinnerei); by F. M. Hentschel; 2d edition, 335 pages, 6 by 9; Alfred Kroner, Stuttgart, Germany. Price $3.00.

This work, of which the second edition has just appeared, is intended as a practical handbook for the mill, particularly for self instruction of workers in the worsted industry. The first chapter is devoted to the wool fibre and in it the author gives in small space a remarkably large amount of information regarding raw wool. The succeeding chapters are as follows: Wool scouring; carding; combing; drawing; spinning; doubling, twisting and reeling; air moistening; coloring worsted top; handling and utilizing worsted waste; general information regarding power transmission, etc. The work treats of the manufacture of worsted yarn by the Bradford and the French systems. It is freely illustrated with excellent drawings and en-

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Business Literature.

Yarn Tables and Calculations: B. F. Boyer Co., Worsted Yarn Spinners, Camden, N. J.

In 1897 the B. F. Boyer Co. issued the first edition of this booklet, which gives much useful information regarding the numbering of yarn and methods of converting one count into another, comparative yarn tables showing the equivalent by different systems, and rules for calculating the size of ply yarns and of single yarn to produce a certain size of ply yarn. The popularity of this book, which is of convenient pocket size, has led to the publication of the 1905 edition, which, in addition to the matter already mentioned, contains a condensed table of tariff rates on wool, and a table showing the comparison of the 1890, 1894 and 1897 tariffs. Manufacturers and overseers of textile mills will find it very useful. A copy can be secured upon application to the publishers, who are well-known manufacturers of woolen, worsted and merino yarns.

Westinghouse Diary for 1906; Westinghouse Electric and Manufacturing Co., Pittsburgh, Pa.

A very convenient pocket diary containing in addition to the diary pages much useful information, which business men, engineers and workers generally will find arranged in convenient form for ready reference. An atlas with maps of the United States, our island possessions, North and South America, and showing the steamship, cable and telegraph lines is included.

Cotton Facts, by A. B. Shepperson, New York City.

This last edition of Cotton Facts gives the usual statistical information regarding the cotton trade and has been carefully compiled and brought to date.

Improved Machinery; the Draper Co., Hopedale, Mass.

A large wall card in blue and orange showing an illustration of the Hopedale works and four of the Draper machines.

Green Fuel Economizer Co., Matteawan, N. Y.

A booklet describing the fans, blowers and exhausters for heating, ventilating and mechanical draft that are installed by this company in connection with their Green Fuel Economizers.

Worsted and Woolen Looms; Crompton Thayer Loom Co., Worcester, Mass.

This is a catalogue in which the various types of the woolen and worsted looms built by the Crompton-Thayer Loom Co. are illustrated and described. These looms embody new features that are designed to produce not only more goods, but better goods.

Roofing Rules; Merchant & Evans Co., Philadelphia, Pa.

This is a handbook on sheet metals used in building construction, arranged for the use of architects, owners, engineers and builders. It contains a large amount of information that makes it very valuable for reference purposes. It is compiled by Powell Evans, the president of the company, the work being suggested by the difficulty he found in selecting the most suitable materials for various purposes when building mills and residences. In the introduction Mr. Evans says that architects welcome the owner's interest and choice, animated doubtless by the feeling that the investor has to pay the bills, not only for the construction, but for the maintenance of the structure, and so should be an intelligent party to the transaction. Further, an owner can devote more time to the details of his individual enterprise than his expert adviser, and should do so in his own interests, acting finally, however, with the benefit of the advice of the architect or engineer.

The pamphlet is thus based on practical experience, and will be found of great value. It begins with an account of the different materials used for roofing, followed by illustrations of buildings in which the Merchant & Evans Co.'s tin, terne plates, metals, etc., have been used.

The Monarch Engine Stop: The Consolidated Engine Stop Co., New York City.

A folder calling attention to the great advantages of an automatic engine stop, and particularly the Monarch stop. The automatic engine stop is the best kind of insurance against bursting fly wheels and resulting loss of life and property. The leaflet presents this insurance feature of the Monarch system in a very interesting way. A copy of the folder will be sent on application.

Hamilton Planers and Shapers; The Hamilton Machine Tool Co., Hamilton, Ohio.

A catalogue containing an illustrated description of planers and shapers of recent and improved designs, manufactured by the Hamilton Machine Tool Co. This company recently completed a large addition to their works, which has a thoroughly modern equipment, doing good work at the lowest possible price. A foundry is connected with the plant, so that castings can be supplied without loss of time.

Calenders.

The Wardwell Needle Co., Lakeport, N. H.

A large wall calendar showing on a dark green background, a reproduction of a painting by Moran, "Sunset on Long Island."

The Shaw Stocking Co., Lowell, Mass.

These manufacturers of the famous "Shawknit" stockings for children are presenting their friends with a very attractive calendar got up in their usual artistic style.

The H. B. Humphrey Co., Boston and New York.

A panel picture of a woman's head with an ornamental metal frame is the reminder of the "time to advertise," which is being sent to the trade by this firm of advertising experts.

The Lawrence Dye Works Co., Lawrence, Mass.

A large size calendar for office use.

Thomas Wolstenholme Sons & Co., manufacturers of French and Bradford spun yarns, Philadelphia, Pa.

A large wall pad, 22 by 14 inches, with a leaf for each day, is the form of the calendar sent out by these well-known spinners of worsted and merino yarns.

Geo. Thomas & Co., engineers and exporters, Manchester, England.

A handsome red leather desk calendar for the year 1906.

Arlington Machine Works, textile finishing machinery, Arlington Heights, Mass.

A wall calendar in black and white. A pretty head is the feature of this calendar.

The G. Drouve Co., manufacturers of cornices, skylights, etc., Bridgeport, Conn.

A large wall calendar for office use.

C. Cain, Son & Greenwood, makers of card clothing, Halifax, England.

A very convenient self-opening memo tablet in diary form, and bound in real leather.

R. H. Hood, manufacturer of machine wool combs, fallers and worsted machinery, Philadelphia, Pa.

A wall calendar, 15 by 20, showing a woman's head handsomely printed in colors.

Birch Brothers, Somerville Machine Works, Somerville, Mass.

An attractive calendar in black and white.

Notice.

Philadelphia, January 15th, 1906.

The business of importing and selling aniline colors and dye extracts heretofore conducted by H. S. Vila, at 115 So. Second St., Philadelphia, has been incorporated under the laws of Pennsylvania, and will be continued at the same address—under the name of

"H. S. VILA COLOR COMPANY."

Branch Office, Boston, Mass.

Steel Card Clothing.

Speed & Stephenson, Boston, Mass., are the American agents for the well-known make of hardened and tempered steel card clothing made by S. Haley & Son, Cleckheaton, England.

The wire is hardened and tempered steel; the point and upper portions of the wire above the bend are by a special process made perfectly hard and durable, thereby ensuring a more even running condition of the wire between the periods of re-grinding, and producing better and more regular carding. It is claimed the cards will run longer than any other without re-grinding, consequently much less re-setting is required, considerable time is saved and more work produced. The manufacturers state that the experience of those using this card wire show it will work several times longer without grinding than any wire hitherto produced, and they claim it is the best and most durable and perfect card clothing ever offered to spinners. The advantage of a very hard tip or point, not tempered, makes hooking of the wire in grinding an impossibility, a valuable qualification which users of card clothing can fully appreciate. The wire retaining its point causes continuity in the carding, thus giving better as well as more even results; less labor in grinding and re-setting of the engine; life of the wire prolonged through diminished grinding. The hardened portion of the point burnishes to a smoother polish than with a softer wire.

Increased Sales.

The sales for B. & L. Anti-Chlorine increased 32 per cent. during 1905, over the best previous year, which is certainly a good testimonial for this product.

Lowell Machine Shop to Build Camless Winder.

The camless winder, formerly built by the A. T. Atherton Machine Co., Pawtucket, R. I., will in the future be built by the Lowell Machine Shop, Lowell, Mass.

It is understood a separate department will be formed, devoted exclusively to winding machines with a view of developing the new line to meet the full requirements of the trade.

Over four thousand camless spindles were sold last year for the winding of knitting and thread yarns on cones, and both the machine and its product are claimed to be giving excellent satisfaction, the package being especially desirable for knitting direct. This is considered a remarkably good showing for a new machine and indicates merit, which, in conjunction with the standing of the Lowell shop, should impress the trade with a feeling of confidence that should increase the popularity of the machine.

All communications should be addressed to Winding Department, Lowell Machine Shop, Lowell, Mass.

The Waters of Life.

It has come to be regarded nowadays as an indisputable fact that the high tension of life in our great modern cities, unless relieved by frequent changes of scene, shortens the natural period of human existence. In most cases, of course, when there is no actual breakdown, people are not aware that they are exhausting in fifty or sixty years a physique intended to serve for seventy or eighty. The summer vacation is usually too short a period in which to store up sufficient reserve vitality for a year of brain work and sedentary life, but a second one in the winter when it can be obtained, if only extending for a few days at one time, will afford the change of air and scene which is so essential.

Many men who have been kept in the city most of the summer by the exigencies of their business, will refuse to take a holiday in the winter, thinking that there is no resort within their reach where a vacation would be worthy of the name. This is a great mistake. Florida and California may be out of the question, but in Lakewood, New Jersey, affords a resort which may be well styled a gem. Offering a complete change of scene, opportunity for physical recreation and social pleasures, a healthful and charming environment during the winter months, and having a temperature ranging from ten to fifteen degrees warmer than that of New York, although within a distance that may be traversed twice a day, permitting one to attend business in the city if necessary, the value of such a retreat to a great class of overworked business men and their families is inestimable. A suggestive booklet on Lakewood has been published by the Central Railroad of New Jersey. It will be sent free to anyone applying to C. M. Burt, General Passenger Agent, 143 Liberty Street, New York City.

The Titan Automatic Sprinkler.

Among the advertisements in the Special Notice Department of this issue is one that indicates that the Mills patent automatic sprinkler is to be introduced into the United States. In England, India and on the Continent this sprinkler is in extensive use and in keen competition with the Grinnell system. It has the approval of the English Fire Offices' Committee for all risks. The special features claimed for this sprinkler are:

Its very high degree of sensitiveness, having a double heating surface through a hollow tube.

There is no strain whatever upon the sealed joint and no liability of the joint giving way.

The makers of this sprinkler claim that they have never had a single joint give way since the sprinkler was introduced, consequently clients adopting the Titan sprinkler avoid water damage.

Another feature is that the distributer has no teeth to be damaged, spoiling the distribution. The specially designed orifice gives the very best possible display.

The manufacturers of the Titan sprinkler, George Mills, Globe Iron Works, Radcliffe, England, desire to be actively represented in the United States, and wish to make arrangements for the sole agency in this country with some concern whose business is such that they can handle it to advantage and exploit it vigorously.

Albany Grease.

The following letters received by Adam Cook's Sons, manufacturers of Albany grease, at 313 West St., New York city, show the high favor in which this lubricant is held by engineers that have given it a trial:

A. J. Berlin, engineer of the J. W. Martin Hardwood Manufacturing Co., Veedersburg, Ind., writes: "Albany grease cup and samples of Albany grease received. I put the cup on the crank pin of our engine that always ran hot, unless we used engine oil freely enough to keep it running through the box continuously; by so doing the engine threw oil all over the engine room so badly that it was impossible to keep the engine clean. After applying the Albany grease cup and Albany grease the box ran cool and the engine looks like a different engine. Now we are converting the entire plant to the use of Albany grease and have ordered three large cans from your Indianapolis representative."

John Liebler, engineer of the Phoenix Foundry Company of Chicago, says: "I have found Albany grease the best of any grease I know of, giving the very best satisfaction. During the hot and cold weather I have found no trouble whatever."

The engineer of the Seventh Regiment armory in the same city says: "I find the Albany grease cup exactly as you claim it to be, and I am now using your Albany grease exclusively."

R. S. Buell, superintendent of the Camilla Gold Mining Company, Hancock, Col., says: "I have been using Albany grease for the past eighteen months and must say that it has given very good satisfaction."

Belts in Wet or Dry Weather.

There are two troublesome elements in belts, under opposite atmospheric conditions, which Cling-Surface is being used for with success in the mills.

In wet weather there is often slippage, especially in the morning. Cling-Surface, by making the belts and ropes entirely waterproof, removes this influence and they will run as well on wet as on other days.

In dry weather many belts generate static electricity, also from slippage. Cling-Surface, by preventing all slippage, again removes this condition. It will almost at once relieve it and without return.

Monarch Engine Stop as a Life Insurance System.

The Consolidated Engine Stop Co., 100 Broadway, New York City, have issued an unique circular that emphasizes the insurance value of their engine stop. It brings out the point that, while an employes' liability insurance policy may, in some measure, give financial compensation for damage, their system of insurance prevents accident and not only saves money, but saves life. It puts several features in a new light, which are well worth consideration by every employer that runs an engine.

Quick Work.

A word about our mill. The Avon Woolen Co. took charge of what was formerly the Golden Rod Woolen Mills at Wales, Mass., December 26, 1905, and the first bale of stock was rolled into the picker room at nine o'clock that day. In two weeks from that day every machine in the mill was in full operation with eight warps on the floor in the weave room and a full warp in every one of the 28 looms, this being done with five sets of 48-inch cards, which ran nine hours overtime. Some of the goods manufactured were finished and in case ready for shipment on the twelfth day after starting the picker. This may not be a miracle, but it is pretty quick time to get a 5-set mill in full operation. Wales may not get an electric railroad, but it is getting a lot of other good things. The wages in our mills were advanced 10 per cent. January 1.—G. F. M.

Accounts Financed.

Attention is called to the announcement on another page, by Messrs. Holzman Bros., bankers, 401 Broadway, New York, offering facilities to manufacturers, importers, and exporters who are desirous of increasing the volume of their business along conservative lines, and who need more capital. They arrange to guarantee and finance accounts under suitable conditions.

The Standard Hosiery Co., of Philadelphia, manufacturers of seamless hosiery, has recently opened an office in New York at room 521, Broadway-Leonard Bldg., 350 Broadway. This office is in charge of Mr. J. P. Quinlan.

Japanese Agents.

The firm of Yagi & Merrill has been succeeded by Yagi & Grant, 396 Broadway, New York City, with branch agencies in Tokio, Nagoya and Kobe.

They announce that they are establishing a demonstrating plant in connection with the Japanese government textile school, by which the prospective buyer is able to see machinery in operation.

The American Soap and Washoline Co.

At the annual meeting of the American Soap & Washoline Co., held in their office in Cohoes, N. Y., January 15th, the following were elected: Hugh Graham, president and treasurer; E. A. Graham, secretary, and C. G. Andrae, manager. These officers also constitute the board of directors. This company have had the most prosperous year in their history, having doubled their capacity, and the outlook for 1906 is exceedingly bright.

Wm. B. Charles.

W. F. Brennan, Jr., who is widely and favorably known in the textile trade, has opened an office at 200 Summer street, Boston, Mass., where he will act as the New England representative of Wm. B. Charles, of Amsterdam, N. Y.

This is an old established house, dealing in cotton and wool waste, cotton yarn, etc. They invite correspondence on any subject in which they are interested and will be glad to call personally on anyone interested in their line. We congratulate Mr. Charles and Mr. Brennan on their association.

Sentinel Warp Stops for Silk and Worsted Looms.

During the second week in January the American Textile Appliances Co., Boston, Mass., received repeat orders for 1,500 of their Sentinel warp stop motions, from some of the largest silk and worsted mills in the country. This company has now over 6,000 of these stop motions on order.

Worsted Machinery Agency.

Edward Jefferson & Bro., 127 South Second street, Philadelphia, have been appointed sole agents for the United States and Canada for all worsted machinery made by the Textile Machinery Association, Ltd., of Leeds, Eng., making this concern one of the largest machinery importing houses in the country. The Textile Machinery Association, Ltd., consists of Taylor, Wordsworth & Co., Hall & Stells, J. B. Farrar & Sons, Hoyle & Preston, John Perry, Ramsden Bros., and Jos. Jefferson & Bro.

The works of the three last-named firms have been dismantled and the patterns for the wool scouring, backwashing, combing and gill boxes have been placed in the Taylor, Wordsworth & Co.'s plant, and all drawing, spinning and twisting machinery patterns to the Hall & Stells plant.

Pushing the Fan Business.

The Green Fuel Economizer Co., of Matteawan, N. Y., long famous as the originators and builders of the fuel economizer, a device for recovering the waste heat in the flue gases from steam boiler plants, some time ago began the manufacture of fans, blowers and exhausters upon a large scale. This company had always been a large user of such apparatus and entered upon its manufacture with the belief that users would appreciate a grade of design and workmanship developed as a result of their own experience. Recent sales by the Green Fuel Economizer Co. seem to indicate that this position was well taken. In the long list we note the following textile installations: Two ventilating fans for Farr Alpaca Co., Holyoke, Mass.; induced draft fan and engine for George E. Kunhardt, Lawrence, Mass.; forced draft fan and engine for the Standard Silk Co., Phillipsburg, N. J.; forced draft fan for Hind & Harison, Clark Mills, N. Y.; economizer, induced draft fan and engine to the Massachusetts Chemical Co., Walpole, Mass.; induced draft fan and engine for the Aragon Mills, Aragon, Ga.; induced draft fan for the Clark Thread Co., Newark, N. J.; forced draft fan and engine for the American Thread Co., Willimantic, Conn.; drying apparatus for Hirsh, Stein & Co., Chicago, Ill.; heater coils, ventilating fan and economizer for the Saratoga Victory Mfg. Co., Victory Mills, N. Y.

Recent Textile Patents.

BALE TIE MACHINE. 809,943. Alvah M. Griffin, East St. Louis, Ill., assignor to New Process Steel & Wire Co.

BOBBIN HOLDER. 809,624. Thomas J. Murdock, Franklin, Mass., assignor to Murdock & Geb Co., Franklin, Mass.

BRAIDING MACHINE. 810,056. Henry Janssen, Wyomissing, Pa., assignor to The Textile Machine Works, Wyomissing, Pa.

CHENILLE TWISTING and Receiving Machine. 808,337. Louis Brandt, New York, N. Y.

COTTON MARKER. Self-fastening. 809,197. George W. Long, Lindsay, I. T.

DYEING INDIGO. 808,398. Hermann Muller, Paris, France.

FABRIC SPREADING Machine. 808,130. Charles Wiebke, New York, N. Y.

FABRICS. Aging Dyed. 810,312. Paul F. Vogel, St. Louis, Mo., assignor of one-half to Walter W. Calmore, Philadelphia, Pa.

FEATHER FABRIC. Felted. 808,869. Edward K. Warren and Jonas H. Holden, Three Oaks, Mich., assignors to the Warren Featherbone Co., Three Oaks, Mich.

FEATHER FABRIC. Felted. 808,791. Edward K. Warren and Jonas H. Holden, Three Oaks,

Mich., assignors to the Warren Featherbone Co., Three Oaks, Mich.

FIBER DISENTANGLING Machine. 808,978. Daniel C. Fisher, Boston, Mass.

FIBRE SCUTCHER. 810,280. Edmund E. Horine, Nicholasville, Ky., assignor of one-half to Roscoe Horine Welch, Lexington, Ky.

FILAMENTS FROM VISCOSE. Apparatus for Producing. 808,149. Charles A. Ernst, Lansdowne, Pa., assignor to Silas W. Pettit, Philadelphia, Pa.

LOOM BRAKE Mechanism. 810,113. Albert A. Gordan, Jr., Worcester, Mass., assignor to Crompton & Knowles Loom Works.

LOOM ELECTRIC STOP MOTION Mechanism. 808,416. Joseph B. Whitney, Brooklyn, N. Y.

LOOM HARNESS Mechanism. 809,933. Randolph Crompton, Worcester, Mass.

LOOM PICKING Motion. 810,191. Joseph D. Crowther and Alfred Sykes, Huddersfield, England, assignors to Edward Hollingworth, Dobcross, England.

LOOM SHUTTLE Motion. 809,776. Madison L. Christian and Elmer E. Reynolds, Clinton, Ia., assignors to American Wire Cloth Co., Clinton, Ia.

LOOM SHUTTLE. Ribbon. 809,564. Wilhelm Hausmann, Barmen, Germany.

LOOM SHUTTLE Spindles. Pivot Bolt for. 808,885. Charles F. Thompson, Oswego Falls, N. Y.

LOOM TENSION DEVICE. 808,658. Edward Herzig, West Hoboken, N. J.

LOOM. WEFT REPLENISHING. 809,158. Christopher Whalley, Clitheroe, England.

LOOM. WEFT REPLENISHING. 808,966. Horace W. Wyman, Worcester, Mass.

LOOMS. Cloth Tension Device for Take-Up Mechanism. 809,239. Clinton S. Andem, North Grosvenor Dale, Conn.

LOOMS. Crank Shaft Support for. 809,392. Anthony J. O'Reilly, Worcester, Mass., assignor to Crompton-Thayer Loom Co., Worcester, Mass.

PILE FABRIC. Woven. 810,012. Matthew J. Whittall, Worcester, Mass.

PILE FABRIC. Woven. 810,013. Matthew J. Whittall, Worcester, Mass.

SHEEP SHEARING TABLE. 810,181. Albert Barth, Pawpaw, Ill.

SHUTTLE. 808,474. Frederick Ott, Woonsocket, R. I.

SHUTTLE BRAKE. 12,428 (Reissue). Jean Laforet, Etoile, France, assignor to Albert B. Strange, New York, N. Y.

SPINNING RING Support. 808,396. Michael H. Maloney, Chelsea, Mass.

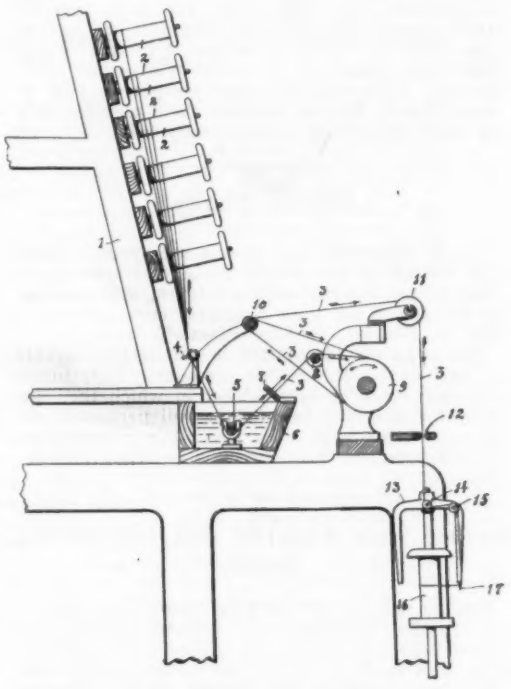
TEXTILE MACHINERY. Faller for Stop Motion Mechanism. Joseph B. Whitney, Brooklyn, N. Y.

TWISTING MACHINE. 808,084. Peter Hardman, Willimantic, Conn., assignor to the American Thread Co., New York, N. Y.

TWISTING AND WINDING Mechanism. 808,106. Charles H. McCall, Banbridge, Ireland.

The objects of this invention are to increase output, capacity, and speed of any given unit; to economize space and weight of moving parts; to reduce power necessary to drive the individual units and the whole organized machine; and to obtain an efficient, positive and simple feed without injury to the substance operated on.

The operation of the device is as follows: When the machine is put in motion, the driven wheel, 9, placed at a point intermediate the water-trough and flier, draws or winds the thread-strand about itself, constantly drawing off from the creels and



passing on to the flier, whence it is wound on the bobbin. As is well understood, the act of winding the bobbin produces sufficient tension between the flier and wheel, 9, to keep the strand tight and moving. The twisting process takes place in that portion of the thread between the first pulley, 14, on the flier and the pulley, 11, beyond which the twist does not pass. The threads may be wound one or more times around the driven wheel, 9, in order more thoroughly to prevent slip and insure sufficient feed.

WARP TENSION. 810,305. Eugene Renz, Stirling, N. J., assignor to Stirling Silk Mfg. Co.

WOVEN FABRIC. 808,976. Thomas B. Dornnan, Philadelphia, Pa.

KNITTING MACHINE. 808,784. Bernard T. Steber, Utica, N. Y.

C. E. RILEY & CO.

65 Franklin Street, .. BOSTON, MASS.

BUILDERS AND IMPORTERS OF

COTTON WOOLEN WORSTED

MACHINERY

DIRECT .. .. IMPORTERS OF **EGYPTIAN COTTON**

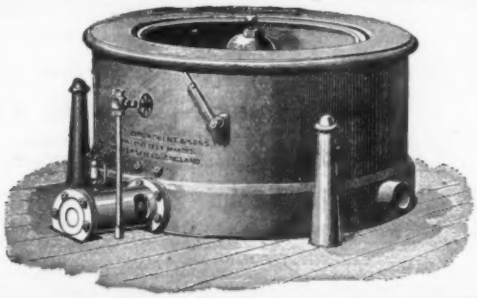
Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



SUSPENDED ON LINKS. REQUIRING NO EXPENSIVE FOUNDATIONS

C. E. RILEY & CO., Sole Agents 65 Franklin St., Boston, Mass.

Machines Kept in Stock in Boston

Your Belts and Ropes in Wet and Dry Weather

Textile mill men have spoken to us of two troublesome elements with belts, which Cling-Surface has cured entirely and given them much comfort.

Wet or damp days. Many mills seem to have trouble in getting good belt service in damp weather, especially in starting in the morning. Cling-Surface, as it makes the belts entirely waterproof and totally unaffected by dampness, removes all of this trouble.

Static electricity on dry days. Other mills have static generated on dry days from slippage. Cling-Surface absolutely prevents slipping of belts or ropes and will stop the static at once and without return.

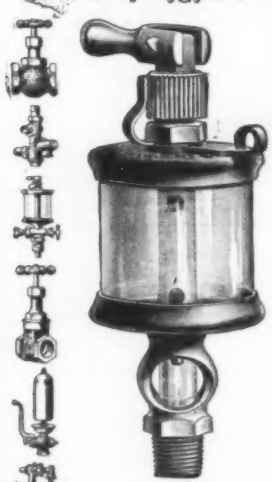
These are little things, and Cling-Surface does much more, but they seem troublesome, and we wish you would give Cling-Surface a chance at them.

Cling-Surface Co

199-205 Virginia Street Buffalo N Y

New York: 39 Cortlandt Street | Boston: 170 Summer Street | Philadelphia: The Bourse

London: Thomas & Bishop, Balfour House, Finsbury



LUNKENHEIMER

Sight-Feed Glass Oil Cups

ARE FAR SUPERIOR TO THE CHEAP CLAP-TRAP DEVICES WITH WHICH THE MARKET IS FLOODED.

WILL NOT SHAKE TO PIECES WHEN PLACED ON JARRING MACHINERY.

NOTIFY US IF YOUR LOCAL DEALER CANNOT FURNISH THEM.

THE LUNKENHEIMER COMPANY

LARGEST MANUFACTURERS OF HIGH-GRADE ENGINEERING SPECIALTIES IN THE WORLD.

General Offices and Works, CINCINNATI, OHIO, U. S. A.

Branches { New York, 26 Cortlandt St. / London S.E., 35 Great Dover St.

We manufacture a complete line of Iron and Brass Globe and Gate Valves, Cocks, Injectors, Oil and Grease Cups, Ejectors, Water Columns, Gauges, Lubricators, Whistles, Pop Safety, Blow-off and Relief Valves, etc.

1 T.W.R.

Buyers' Index.

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Accounts Financed.
Holzman Bros.

Accountants, Public.
Cathrall, W. M.

Air Moistening System.
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Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm. Co.
Woonsocket Machine & Press Co.

Bailing Machine.
North Chemsford Machine Co.
Torrance Mfg. Co.

Bandings.
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Morris & Co.

Belting.
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Cling Surface Mfg. Co.
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Shultz Belting Co.
Stephenson Mfg. Co.

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Allen, William Sons Co.
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Textile Finishing Machinery Co.

Bleaching Materials.
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Blowers and Blower Systems.
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Barney Ventilating Fan Works.
Boston Blower Co.
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Mass. Fan Co.
New York Blower Co.
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Bridges.
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Mason Brush Works.
Parks & Woolson Machine Co.

Burr Pickers.
Brown Cotton Gin Co.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Burlaps.
Stoddard, Haserick, Richards & Co.

Buttons.
International Button Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks. (Arthur Birch prop.)
Butterworth, H. W. & Sons Co.
Taunton, New Bedford, Copper Co.
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Morris & Co.

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Philadelphia Textile Machinery Co.
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Ashworth Bros.
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Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

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Parks & Woolson Machine Co.
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Chemists.
Little, Arthur D.

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Clocks.
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Cloth Boards.
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Comb Aprons.
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Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

Concrete Work and Construction.
Simpson Bros. Corporation.

Conveyors, Pneumatic.
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Conveying Machinery and Chains.
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Cop Tubes.
American Textile Specialty Mchy. Co.
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Rome Metal Co.
Taunton, New Bedford, Copper Co.

Coppersmiths.
Badger, E. B. & Sons Co.
Burkhard, Thomas

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Buffalo Forge Co.

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Altemus, Jacob K.
American Textile Appliances Co.
American Textile Specialty Mch'y Co
American Drying Machinery Co.
Ashworth Bros.
Barker, James.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Cohoes Foundry & Machine Co.
Coldwell-Gildard Co.
Curtis & Marble Machine Co.
Draper Company.
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Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Hetherington, John & Sons, Ltd.
Howard & Bullough American Mach. Co.
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Philadelphia Textile Machinery Co.
Providence Machine Co.
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Saco & Pettee Machine Shops.
Schofield, Geo. L.
Smith & Furbush Machine Co.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
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Kitson Machine Co.
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Stoddard, Haserick, Richards & Co.

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Bosson & Lane.

Cotton Waste.
Blaisdell, S., Jr., Co.
Charles, W. B.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Cutter for Knit Goods.
Eastman Machine Co.
Langston, Samuel M.

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Cameron, James A.
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Standard Starch Co.
Stein, Hirsh & Co.

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Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Stafford, G. W., Mfg. Co.

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Hood, R. H.
Metallic Drawing Roll Co., The.

Dryers.
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American Drying Machinery Co.
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Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.
Mass. Fan Co.
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Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Vacuum Process Co.

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Bull, William C.
Pearson, J. T.

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Allington & Curtis Mfg. Co.
Philadelphia Drying Machinery Co.

Dyers, Bleachers and Finishers.
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Fairhill Bleachery.
Fawell, Arthur.
Firth & Foster Co.
Greenwood, R. & Bault.
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Ingrahamville Dye Works.
Lorimer's, The Wm. H. & Sons Co.
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Hunter, James, Machine Co.
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Klauder-Weldon Dyeing Machine Co.
Klipstein, A. & Co.
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Leyland, Thos. & Co.
Parks & Woolson Machine Co.
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Philadelphia Textile Machinery Co.
Rodney Hunt Machine Co.
Smith, Drum & Co.
Sirocco Engineering Co.
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Vacuum Process Co.
Whiteley, William, & Sons, Ltd.

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Bosson & Lane.
Cassella Color Co.
Continental Color & Chemical Co.
Kalle & Co.
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Johnson, Chas. A. & Co.
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Metz, H. A. & Co.
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Sykes, Walter F. & Co.
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West Indies Chemical Works, Ltd.
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Crocker, Wheeler & Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electric Cloth Cutter.
Eastman Machine Co.

Electric Fans.
American Blower Co.
Buffalo Forge Co.
Crocker-Wheeler Co.
General Electric Co.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Lamps.
Sturtevant, B. F., Company.

Electric Lighting.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Yale & Towne Mfg. Co.

Electric Motors.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Elevators.
Cohoes Foundry & Machine Co.
Salem Elevator Works.

Embroidery Machines for Hosiery and Knit Goods.
Walther, Otto.

Employees' Time Recorders.
Pettes & Randall Co.

Engine Stops.
Consolidated Engine Stop Co.

Engineering Specialties.
Lunkenheimer Company.

Engineers' Supplies.
Lunkenheimer Company.

Engravers.
Smith Bros.

Exhaust Heads.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
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Feed Water Heaters.
Green Fuel Economizer Co.
Murray Iron Works Co.
Scaife, W. B. & Sons.

Feed Water Pumps.
Goulds Mfg. Co.
Murray Iron Works Co.
Scaife, W. B. & Sons.

Feed Water Purifiers.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.
The Hungerford Filter Corp.

Feeds.
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Felt Hardeners.
Farrell Foundry and Machine Co.

Felting Machinery.
Farrell Foundry and Machine Co.

Filters.
Norwood Engineering Co.
Phila. Water Purification Co., The.
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The Hungerford Filter Corp.

Finishing Machinery.
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Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B. & Sons Co.
Carbondale Chemical Co.

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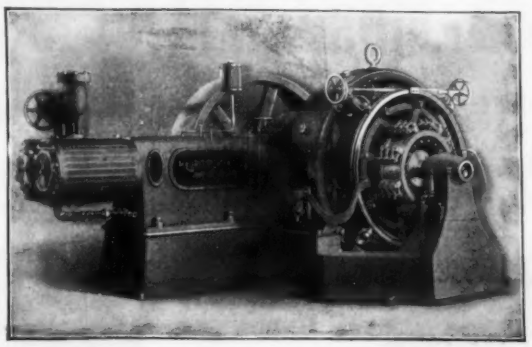


STURTEVANT GENERATING SETS

Require the minimum of attention. The engine is entirely enclosed and provided with a system of forced lubrication. Not only is the oil positively fed to each bearing, but a film is maintained under 10 to 20 lbs. pressure between the surfaces. The wear is decreased, power is saved, and overheating is absolutely avoided.

A watershed partition with bronze stuffing box is so inserted in the end of the frame as to prevent oil entering the cylinder on the piston rod, and making it impossible for the water of condensation to pass from the cylinder to the interior of the frame. All moving parts are readily accessible through the oil tight removable plates.

The generator, also of Sturtevant manufacture, is built to the same high standard, tested thoroughly before shipment, and equal to any emergency.

SEND FOR BULLETIN No. 63

B. F. STURTEVANT CO., BOSTON, MASS.

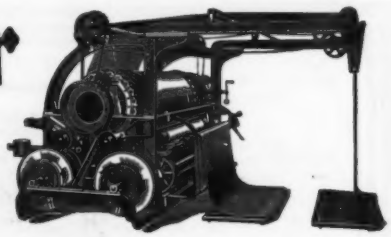
General Office and Works, Hyde Park, Mass.

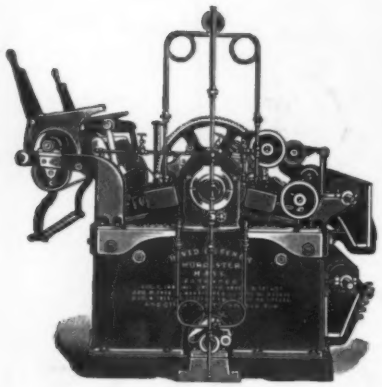
New York Philadelphia Chicago London

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Heads, Steam Traps, Etc. 556

David Gessner

Worcester, Mass.

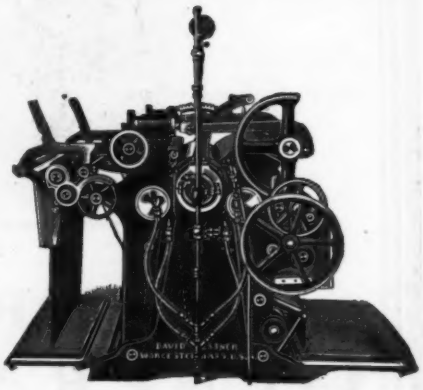




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Proof Doors and Windows.
Badger, E. B. & Sons Co.

Fire Pumps.
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Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combes-Barbour, Ltd.

Fluted Rolls.
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Forwarders.
Salvator Transfer, Inc.

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Evans, G. Frank.

Fuel Economizers.
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Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.

Garnetts.
Garnett, P. & C., Ltd.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gas Engines.
Jones, Lewis.

Gaskets—Copper.
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Gassing Machines.
Stubbs, Joseph.

Gauges.
Crosby Steam Gage & Valve Co.
Lunkenheimer Co. (all kinds).
Walworth Manufacturing Co.

Gears.
Farrell Foundry and Machine Co.
New Process Raw Hide Co.

Gear Cutting.
Farrell Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Grate Bars.
Tupper, W. W., & Co.

Grease.
Cook's, Adam, Son.

Guides.
Mitchell-Bissell & Co.

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Heddles.
Steel Heddle Mfg. Co.
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Hoisting Apparatus.
Economy Engineering Co.
Yale & Towne Mfg. Co.

Hosiery Boards.
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Hosiery Labels.
Beck, Charles Paper Co.
Kaumagraph Company

Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.

Hydraulic Rams.
Power Specialty Co.

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American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Riley, C. E. & Co.
Rodney Hunt Machine Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.

Injectors.
Lunkenheimer Co. (all kinds).

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Ironing Machines for Knit Goods.
Craw, J. W., Laundry Machinery Co.

Jack Spools.
Sweet & Doyle.

Jacquards.
Halton's, Thomas, Sons.

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Krout & Fite Mfg. Co.
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Rodney Hunt Machine Co.
Scott & Williams.
Union Special Machine Co
Willcox & Gibbs Sewing Machine Co

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CROMPTON-THAYER LOOM COMPANY

—— MANUFACTURERS OF ——

Fancy Looms

For Weaving Worsted and Woolen, Fancy Cottons and Silk Fabrics.

DOBBIES, BOX MOTIONS and SUPPLIES.

WORKS AND OFFICES:

677 Cambridge Street, - Worcester, Mass.

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Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H. & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co
Grosser Knitting Machine Co.
Guenther, Max.
Hilscher, G.
Jenckes, E., Mfg. Co.
Jones, Lewis.
Koch, Edward W.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walter & Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's, Wm., Son.
Brinton, H. & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Guenther, Max.
Ives, Loyal T.
Jarrard Needle Company.
Kolb, Frank E.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Treat, Orion.
Wardwell Needle Co.

Labeling Machines.
Beck, Chas., Paper Co., Ltd.

Lamps, Incandescent.
General Electric Co.
Sawyer-Mann Electric Co.
Westinghouse Electric & Mfg. Co.

Leather.
Bowes, L. M., Co.

Loom Pickers.
Garland Mfg. Co.

Loom Repairs and Parts.
Glaser Mfg. Co.

Looms.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Draper Company.
Kilburn, Lincoln & Co.
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Lowell Machine Shop.
Mason Machine Works.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Hepworth, John W. & Co.
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Lubricators.
Cook's, Adam, Son.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
Lunkenheimer Co.

Lumpers.
Gerry, George & Son.
Schofield, Wm., Co.

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Schofield, Geo. L.
Stead, Arthur.
Taylor, James.

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Parks & Woolson Machine Co.

Mechanical Draft.
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Boston Blower Co.
Buffalo Forge Co.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

Mechanical Engineers.
American Blower Co.
Buffalo Forge Co.
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Glaser Mfg. Co.
Murray Iron Works Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

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Lorrimer, Wm. H., Sons Co.
Luzern Cotton Yarn Co.

Mercerizing Machinery.
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Butterworth, H. W. & Sons.
Klauder-Weldon Dyeing Machine Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Whiteley, William & Sons, Ltd.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B. & Sons Co.

Metallic Packing.
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Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
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Garland Mfg. Co.
Glaser Mfg. Co.
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Lane, W. T. & Bro.
Leigh, Evan A.
Lunkenheimer Company.
Main Belting Co.
Morris & Co.
Murphy, E. W. & Co.
Philadelphia Drying Machinery Co.
Riley, C. E. & Co.
Richardson Bros.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G. & Son.
Tucker, W. W. & C. F.
Turner, J. S., Mfg. Co.
Ward & Vandegrift.
Walworth Manufacturing Co.

Motors.
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Napping Machinery.
American Napping Machine Co.
Borchers, Richard C. & Co.
Curtis & Marble Machine Co.
Gessner, David.
Jones, Lewis.
Leigh, Evan A.
Parks & Woolson Machine Co.
Whiteley, William & Sons, Ltd.

Noils (Silk).
Malcolm Mills Co.
Ryle, Wm. & Co.

Office Supplies.
Niagara Clip Co.

Oil Cups.
Lunkenheimer Co.
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Oils.
Borne, Scrymser Co.
Cook's, Adam, Son.
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Murphy, E. W. & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.

Oil Hole Covers.
Tucker, W. W. & C. F.

Olive Oil and Olive Oil Foots.
Dewsnap, John B., & Company.

Overhead Tracks.
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Overseaming Machines.
Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.

Packing.
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Pantagraphs for Mill Engraving.
Johnson, C. A. & Co.

Paper.
Richardson Bros.
Smyth, J. L. N. Paper Co.

Paper Boards.
Smyth, J. L. N. Paper Co.

Paper Box Machinery.
Beck, Chas., Paper Co., Ltd.
Langston, Samuel M.

Patent Solicitors.
Crosby & Gregory.
Howson & Howson.

Perforated Metals.
Hopkins Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

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Pancoast, Henry B. & Co.
Scaife, W. B., & Sons.
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Porcelain Guides.
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Farrell Foundry and Machine Co.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Klein, Chas. C.
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Saginaw Manufacturing Co.
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Kitson Machine Co.
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Riley, C. E. & Co.
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Boomer & Boschert Press Co.
Butterworth, H. W. & Sons Co.
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Spence & Rideout.
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Woonsocket Machine & Press Co.

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Philadelphia Water Purification Co.
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Foster Machine Co.
North Chelmsford Machine Co.
Payne, G. W. & Co.

Rag Pickers.
Schofield, Wm., Co.
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Ruberoid Roofing.
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Dinamore Mfg. Co.
Fales, L. F.
Manufacturers' Supplies Co.
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Union Special Machine Co.
Walter & Co.
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Silk Mill Supplies.
Hall, I. A. & Co.

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Drouve, G., Co.

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Lowell Machine Shop.
Riley, C. E. & Co.

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Dobbins Soap Mfg. Co.
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Nicetown Mfg. Co.

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Bamford & Smith.
Bodden, Wm., & Son, Ltd.
Buckley, Benjamin, Sons, Gun Mill.
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Easton-Burnham Co.
Hopkins Machine Works.
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Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.
Ward & Vandegrift.
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Hartford Steam Boiler Inspection & Insurance Co.

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American Blower Co.
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Hall, Amos H., Son & Co.
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Lewis, H. F. & Co.
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Textile Finishing Machinery Co.
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Woolford, George, Tank and Vat Mfg. Co.

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Friedberger-Aaron Mfg. Co.
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Weimar Bros.

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Drouve, G. Co.
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Watchman's Clocks.
Nans & Co.
Pettes & Randall Co.

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Scaife, W. B. & Sons Co.

Water Purifiers and Filters.
Hungerford Filtration Co.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons Co.

Water Softeners.
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Stevens Tank & Tower Co.
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Smith, S. Morgan, Co.

Water Wheel Governors.
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Leffel, James, & Co.
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Excelsior Wool Oil Compound Co.

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Sternberg, Fred, & Co.

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Monument Mills.
New England Cotton Yarn Co.
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ATLANTA, GA., Carter & Gillespie Electric Co.
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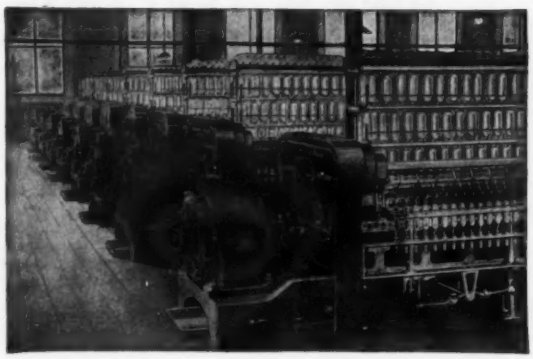

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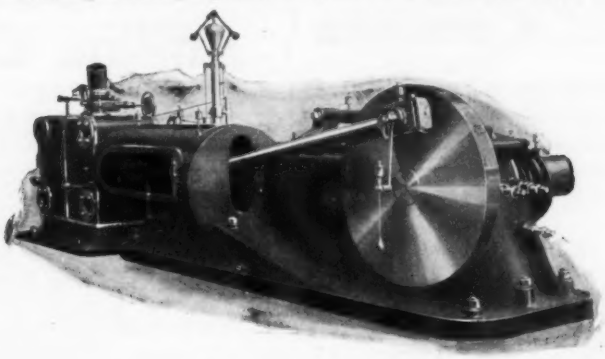

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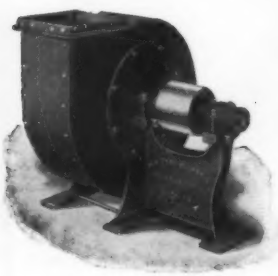

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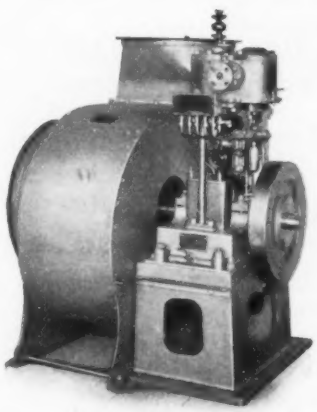

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Superintendent and Designer wants position as manager. Experienced designer and practical man for the tie-up of looms for weaving ribbons, silk, upholstery and cotton goods, plain and jacquard cloths. 20 years' experience as manager and understands a mill in all its branches. Knows the coloring for stripes and figured upholstery, cotton silk and ribbon novelties a specialty. 3423, Textile World Record, Boston.

Superintendent of Woolen Mill. American, 40 years of age, accustomed to woolens, worsteds, cottons and shoddy. Worked on all kinds of machinery. Would accept position as Superintendent and Designer and would like to go South. 3405, Textile World Record, Boston.

Superintendent of Woolen Mill. American, 35 years of age, with experience on cotton worsteds, piece dyes, unions, thibets, all wool goods and satinets. Understand nearly all machinery used in this work. Is Dyer and Finisher on above goods and would accept such a position. Wants position in the East. 3403, Textile World Record, Boston.

Assistant Superintendent. American, 28 years of age, with experience as manager, understands buying and selling, and overseeing any part of carpet yarn mill, wants a position in the South. A1 references. 3372, Textile World Record, Boston.

Superintendent and Designer or Agent. American, 41 years of age, has worked in nearly every department of a woolen mill and thoroughly understands his business. On all classes of wool and worsteds, dress goods, broadcloths, overcoatings, rain cloths, meltons, army goods, etc., and on all the best makes of machinery. Wants position in the States. 3416, Textile World Record, Boston.

Superintendent of Woolen Mill. American, 36 years of age, with experience as superintendent and manager 10 years. Accustomed to unions, satinets, beavers, cloakings, dress goods, etc., and the machinery used in this work. A1 references. 3410, Textile World Record, Boston.

WOOLEN SUPERINTENDENTS.

Superintendent or Designer. American, 37 years of age, married, wants a position in United States. Worked on light and heavy weight woolen and worsted goods, fancy and plain, wool and worsted piece dyes, also pebble worsteds. Been superintendent 6 years and designer 8. 3353, Textile World Record, Boston.

Superintendent or Assistant Superintendent. Worked on fancy and piece dye dress goods, fancy suitings and overcoatings in some of the best New England mills. Experienced in details of manufacturing and cost calculation. Young man, American, married. Best references as to character and executive ability. 3360, Textile World Record.

Agent or Superintendent of woolen or worsted mill. First class man, American, 35 years of age, is seeking position in the East. Understands business thoroughly. Accustomed to all grades men's wear, woolen and worsted, fancy and piece dyes, also dress goods, shawls, steamer rugs, etc. 3377, Textile World Record, Boston.

Superintendent or superintendent and designer. 45 years of age, with experience on fine fancy worsteds and piece dyes, fancy and piece dye cheviots, fancy woolens and worsteds, also mercerized piece dyes. Understands silk manufacture also. 3382, Textile World Record, Boston.

Assistant Superintendent. Worked on Woolens and worsteds of all kinds. Graduate of a Textile School. American; 23 years of age; single. 3228, Textile World Record.

Superintendent or Manager. Over 35 years' mill experience; last 20 years as superintendent; active, energetic, competent and excellent manager of help. Understands all raw materials, wool, cotton, shoddy, and their values. Also understands carbonizing. Could take a position at short notice. 3279, Textile World Record.

Woolen Superintendent and designer. Worked on men's wear, worsteds, fancy cassimeres, smoking jackets, over-cloth, ladies' dress goods. 28 years of age; English; single. 3234 Textile World Record.

Superintendent of small woolen mill. Piece dyed goods, thibets, Venetians, meltons, etc. 3114, Textile World Record.

Assistant Superintendent, Woolen. American, 24 years of age. Worked on woolen and worsted suitings and dress goods. Prefers position in the East. 3421, Textile World Record, Boston.

Superintendent Shoddy Mill or Wool Carder would accept position as shoddy salesman. Worked on all kinds of yarns and shoddies, on Jas. Smith, D. & F., Lombard, Furbush & Son machines. Prefers a position in Mass. 3419, Textile World Record, Boston.

Superintendent of a Woolen Mill. 44 years of age; American; married; familiar with all kinds of woolen goods, including cassimeres, dress goods, cheviots, covert cloth, cotton warp goods, both high and low stock. First-class recommendations. 3321, Textile World Record, Boston, Mass.

Woolen Superintendent or overseer of dyeing or finishing. Worked on all kinds of woolen goods, worsted and union. Age 39. Will not go South or West. First-class references. 1210, Textile World Record.

Worsted Superintendent or overseer of combing, spinning and twisting. Worked on mohair, alpaca, all foreign and domestic wools. Familiar with all kinds of machinery; first-class references. Age 45, married. 3248, Textile World Record.

Asst. Superintendent or Overseer. 20 years' experience as overseer in both England and Scotland over combing, drawing, spinning, etc. Can work both long and short wools, get up all kinds of mixtures, instruct the shading of batches, etc. Has good references. 43 years of age. 3086, Textile World Record.

COTTON SUPERINTENDENTS.

Superintendent of a Cotton Mill; 45 years of age; married; Scotch; familiar with fancy ginghams, denims, flannels, and all kinds of sheeting. Has first-class references. 3318, Textile World Record, Boston, Mass.

Superintendent or boss carder of carding and spinning in cotton mill. Familiar with all kinds of cotton yarns, including high and low stock; familiar with combs; first-class references; 36 years of age; married. 3290, Textile World Record, Boston, Mass.

Superintendent in a Cotton Mill or overseer of carding in a large mill. Would prefer a position in Alabama. 42 years of age; American; familiar with both yarns and cloth. Worked in mills that have made yarns from 7s to 100s, American and Egyptian cotton. Has first-class recommendations. Could take a position at short notice. 3304, Textile World Record, Boston, Mass.

Superintendent of broad silk mill wants position. Age 39; English; married. Worked on mostly plain goods. Could be of good service to some reliable concern just starting up. Has small plant of his own which he would put in as stock with a first-class concern. 3154, Textile World Record.

Superintendent. Would like position in South. Not particular about salary to start. Machinist and thoroughly acquainted with all kinds of card room machinery, also spinning frames. Taken superintendent course in textile school and has had 23 years of practical experience in the mill, mostly on fine yarn work. 3044, Textile World Record.

Superintendent of cotton mill or overseer. Handled all kinds and numbers in yarn mills, cloth mills, colored warps, etc. Speeder, warper, spooler and spinner in the family. Age 48; American; married. 3219, Textile World Record, Boston, Mass.

Cotton Superintendent. Has been boss carder, ring spinner and comber on all kinds of cotton yarns, hosiery yarn a specialty. First-class references. Age 44, married. 3025, Textile World Record.

Superintendent Cotton Mill or overseer of carding in large mill. 35 years of age, married, American. Worked on coarse and fine fancy cloths. Carded combed staple cotton for weaving as fine as 135s. Carded solid colors and mixes for hosiery yarns to 80s. Good references. 3447, Textile World Record, Boston.

Superintendent. Position wanted by a young man 28 years of age. Worked on all kinds of cotton goods, fancy colored goods and plain. Worked on all kinds of cotton machinery. American. 3458, Textile World Record, Boston.

Superintendent of Finishing Works or overseer. Position wanted by a man who has a wide experience on cotton goods of all kind, fast blacks and sateens. 49 years of age, married, with good reference from past employer. Will go any place for a good position. American. 3461, Textile World Record, Boston.

Superintendent or Superintendent and Designer in a cotton mill. Familiar with all lines of colored and cotton tickings, denims, shirtings, ginghams, lappet and dress goods. Worked on English and American machinery. 36 years of age, married. First class recommendations. 3331, Textile World Record, Boston.

Superintendent or Boss Weaver. American, with 15 years' experience, wants first class position in New England. Understands nearly all cotton looms, also slashing, beaming and quilling. Worked on jacquards, lenos, fancies, lappets, box work and plain. 3351, Textile World Record, Boston.

Superintendent of yarn mill or plain cotton weaving or assistant. 33 years of age; American. Worked on all classes of yarn up to 50s and plain weaving. Married. 3226, Textile World Record.

Superintendent of Bleaching and finishing works. Has experience on Nottingham, Irish point, bobbinet, and renaissance curtains a specialty. Also Swiss dots, organdies, lace handkerchiefs, embroideries, etc. Thoroughly understands aetying, carbonizing and dyeing. A practical man, no experimenter. 3443, Textile World Record, Boston.

Superintendent and Designer, or Designer. Young man, American, with 4 years' experience as designer. Worked on shirting and all kinds of elastic and non-elastic webs, on Crompton and Knowles, broad and narrow looms. Will accept a good position anywhere in United States. 3359, Textile World Record, Boston.

COTTON CARDERS.

Carder in Cotton Mill. Coarse or fine, white or colored, hosiery, Egyptian, etc. Age 35; Canadian; married. 3029, Textile World Record.

Overseer of Carding. Has held all positions in picker and card rooms. White and colored goods, 8s to 40s. 3070, Textile World Record.

Overseer of Carding Department. Age 38; English; married. Plain and fancy goods; both combed and carded, Cotton Sea Island, Peruvian, Egyptian, Peeler, etc. Good references. 3196, Textile World Record.

Overseer Cotton Carding or Spinning desires position. Age 47; American; married. Is familiar with all the modern makes of English and American machinery, revolving top flat cards, single and double carding. 2073, Textile World Record.

Overseer of Cotton Carding or superintendent of a small mill. Worked on coarse and fine yarns from 10s to 170s, carded and combed. Will not go West, South or to Canada. Age 37, American. First-class references. 1027, Textile World Record.

Overseer of Cotton Carding. Worked on all kinds of yarn. At present employed in a large mill, but will change for a better position. Familiar with all kinds of machinery. Will not go South. 36 years of age, French. 1991, Textile World Record.

Second Hand in card room. American, 30 years of age, with a number of years' experience in cotton card room work. Has worked in large mills in Fall River and New Bedford, and on prints, fine and coarse yarns, and English and American machinery. Prefers a position in the East. 3341, Textile World Record, Boston.

Overseer of Carding and Frame Spinning. Worked on all kinds of stock, both high and low. 30 years of age, first class recommendations. 1759, Textile World Record, Boston, Mass.

Overseer of Cotton Carding or assistant superintendent. Worked on all kinds of cotton, including cotton waste, sea island and down to sweepings. Familiar with all kinds of carding machinery, first class recommendations, 29 years of age, married. 3323, Textile World Record, Boston, Mass.

Overseer of Carding. American, 26 years of age, worked in all positions in card room up to overseer. Understands nearly all makes of English and American machinery and has worked on white goods, both fine and coarse. 3346, Textile World Record, Boston.

Second Hand in cotton card room. American; 30 years of age, with a number of years' experience in card room. Has worked in large mills in Fall River and New Bedford and worked on prints, fine and coarse yarns, English and American machinery. Prefers a position in the East. Good references. 3341, Textile World Record, Boston.

Overseer of Cotton Carding, 40 years of age; married; worked on yarns, sheetings, ginghams, in some of the best mills in this country and good references from mills where employed. 3450, Textile World Record, Boston.

Overseer of Cotton Carding. Worked on plain and fancy coarse and fine white goods. Wants only Rhode Island or Connecticut. 47 years of age, married. First-class references. 1884, Textile World Record.

Overseer or Second Hand Carding. 29 years of age, unmarried, with experience as second hand and overseer. Been overseer for last three years. Worked on white and colored cotton goods from 4s to 70s, and understands nearly all machinery used in making these goods. 3217, Textile World Record, Boston.

Overseer of Cotton Carding. American, 34 years of age; worked on all classes of cotton goods and all machinery used in this work. Would accept a good second hand position. Prefers position in the East. 3393, Textile World Record, Boston.

Superintendent or overseer of carding in a large mill. Worked on sheetings, ginghams. Will not go West. Familiar with all kinds of cotton machinery. 41 years of age. American. First-class references. 2021, Textile World Record.

Cotton Superintendent or overseer of carding. Worked on all white goods yarns from 12s to 150s. Familiar with the Lowell, Saco & Pettee revolving flat cards. Age 37, married; first-class references. 1898, Textile World Record.

Card Grinder, 38 years of age, English, with experience in good mills. Worked on print cloth and on all makes of English cards. Will go anywhere for good position. Good references. 3426, Textile World Record, Boston.

COTTON SPINNERS.

Overseer of Cotton Spinning or superintendent of a small mill. Would accept any reasonable offer. Worked on all grades of cotton goods and cotton yarns from 20s to 100s. Familiar with all kinds of cotton machinery. 44 years of age, American, married. 1882, Textile World Record.

Overseer of Mule Spinning who has had a wide experience in large New England mills on yar ranging from 24's to 160's is open to a position. .. years old; American. Good references. 2003, Textile World Record.

Overseer Spinning, spooling and warping. American, 34 years of age, with experience on sheetings, shirtings, sateens, twills, awnings, ducks, denims, etc., and all machinery used in this work. Capable of taking a superintendent's position, but would accept good overseer's position. 3374, Textile World Record, Boston.

Overseer of Cotton Spinning, 25 years of age, with experience on heavy and medium white and colored goods, 5s to 60s. Denims, chambrays, awnings, napped goods, fine shirtings, etc. Worked on all American ring spinning frames, Draper spoolers and warpers, also twisters and on ball or chain and beam. 3420, Textile World Record, Boston.

Overseer of Cotton Spinning. Englishman with experience on mule and frame spinning, worked on 3 1/2 to 200s filling, and on all kinds of novelty yarns, white or colored, accustomed to all machinery used in this work, wants a position in the States. 3437, Textile World Record, Boston.

Overseer of Ring Spinning, Spooling and Warping. Worked on all classes of goods, hosiery yarns, long and short staples from 8s up. Familiar with Sayles & Jenks, Mason, Lowell, Whiting and Saco & Pettee machinery. First class references. 28 years of age, married. 3308, Textile World Record, Boston, Mass.

Overseer Ring Spinning, spooling and warping wishes a position. A married man, with good experience. Worked on sheetings, shirtings, jeans, grain bags. 3152, Textile World Record.

COTTON WEAVERS.

Overseer Cotton Weaving. Position wanted by a man who has had experience on plain goods, twills, sateens on all counts from 18s up. 34 years of age, married. Could take a position at short notice. Worked on Mason, Colvin, Whitin, Lowell and Northrop looms. 3455, Textile World Record, Boston.

Overseer of Cotton Weaving. American, 27 years of age, with experience on prints, cambrics, sateens, drills, corded goods, etc. Worked on Draper, Whitin, Lowell, Mason and Cohen looms. Prefers the East. 3430, Textile World Record, Boston.

Overseer of Cotton Weaving. American, 45 years of age, with 26 years' experience on plain sheetings, sateens and twills as fixer, second hand and overseer. Able and temperate. Wants position in the East. 3439, Textile World Record, Boston.

Overseer of Weaving. Good experience and reference. Worked on lawns, sheetings, sateens, dimities, fancies, etc. 3188, Textile World Record.

Overseer Cotton Weaving. Plain and a variety of fancies, lenos, etc. Good experience. A young man; English; married. 3147, Textile World Record.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Overseer of Weaving. Worked on all kinds of cotton goods, plain and fancy, including Turkish and cotton towels, also fancy worsted dress goods. Age 39; English; married. 3236, Textile World Record.

Overseer of Weaving or loom fixing. Worked on cotton, woolen, silk. Used to Crompton & Knowles looms, both box and plan, Lewiston looms, Mason, Colvin, Whiting, Patterson, etc. Age 43; Scotch; married. 3216, Textile World Record, Boston.

Overseer of Weaving or designer. Lawns, sheetings, twills, satc.ns, quilts, bedford cords, lappets. A young man; unmarried. Good experience and first-class recomendation. 3063, Textile World Record.

DESIGNERS.

Designer, woolen and cotton novelties. Used to fancy cassimere, ladies' dress goods, suitings and men's wear worsted, cotton and wool mixes. First-class references. Age 24; Scotch; single. 3212, Textile World Record, Boston.

Designer or boss weaver. Age 35; American; married. Worked on all kinds of worsteds, cheviots, men's wear, dress goods and coat linings. Used to Knowles and Crompton looms. First-class references. Can take position one week's notice. 3210 Textile World Record, Boston.

Designer or Assistant Superintendent. 40 years of age, married, with experience in best mills in New England. Worked on all kinds of dress goods, from the finest to the heaviest. Understands web drawing and twisting, hand dressing and short chain beaming. 3363, Textile World Record, Boston.

Jacquard and Crompton Loom Designer. 30 years of age, with experience. Worked on fancy cotton, Indian shawls, ladies' shawls, cassimeres, etc. An original designer and will send samples of work when desired. Would accept a good position anywhere in the States. 3364, Textile World Record, Boston.

Designer. Familiar with worsteds and woolens of all kinds. Could take a position at short notice. 28 years of age; German. 3264, Textile World Record, Boston, Mass.

Assistant Designer. American, with experience on men's wear, dress goods, mercerized, rain cloth, uniform cloth, woolens and worsteds. 22 years of age. Wants a position in the States where he can find advancement. 3424, Textile World Record, Boston.

Designer or assistant superintendent. Worked on cotton warp flannel coverts, plain and fancy cotton warp, and all wool dress goods. First-class references. 3244, Textile World Record.

Assistant Designer or assistant superintendent. Young man; American. Men's wear, ladies' dress goods, shirtings, silk brocades, etc. Graduate of Philadelphia Textile School, and also has had short experience in mill. 3160, Textile World Record.

Designer on any class of dress goods, waistings, mantle cloths, fine shirtings, etc. 3203 Textile World Record.

Designer. Worked on ladies' dress goods, shirtings and flannels and some jacquard designing; first-class recommendations; 33 years of age; married. 3285, Textile World Record, Boston, Mass.

Designer. Familiar with suspender, elastic and non-elastic; also tapes and dress goods. 29 years of age; first-class references. 3186, Textile World Record, Boston, Mass.

Designer or superintendent. Age 37; English; married. Experienced in this country and England. Worked on cloakings, suitings, coverts, broadcloths, etc. Wants $30 to $40 per week. Mill closed, and wants place at once. Good references. 3140, Textile World Record.

Agent, Superintendent or Designer in a woolen mill. Could accept a position in four weeks' notice. Familiar with all kinds of woolen goods, including cheviots, cassimeres, flannels, blankets and mackinaws. 28 years of age; American; first-class references from mills where he has been employed. 3280, Textile World Record, Boston, Mass.

Superintendent, Designer or Boss Weaver. Age 48; American. Worked on all kinds of woolen goods, cotton dress goods, woolen and worsted men's wear. First-class recommendations. 1982, Textile World Record, Boston, Mass.

Designer, assistant superintendent or boss weaver. Familiar with all kinds of worsted dress goods, fancy cotton waistings, corduroys, worsted suitings and cassimeres. Familiar with all kinds of dressing and winding. English and Crompton & Knowles looms. 32 years old; English; first-class references. 3080, Textile World Record.

Assistant Designer or asst. superintendent. Dress goods and men's wear. Age 25; Austrian; unmarried. Wants position in Philadelphia or suburbs. 3193, Textile World Record.

Designer on cotton, or assistant on woolen, worsted or Jacquard work. Age 31; American; unmarried. 3190, Textile World Record.

WOOLEN SPINNERS.

Boss Woolen Spinner. Would take a good secondhand job. Used to Davis & Furber and Johnson & Bassett machines. Worked on all kinds of goods. First-class references. 3215, Textile World Record, Boston.

Woolen Boss Spinner, or would accept a good second-hand position. Familiar with all kinds of American spinning machinery; Davis & Furber, Johnson & Bassett, English mules, Curtis and Platt. First-class references; age 48, English. Could take a position at once. 589, Textile World Record.

Boss Spinner in a woolen mill.. 32 years of age, American, familiar with Davis & Furber, Johnson & Bassett and English mules and twisters. First-class references. No. 3275, Textile World Record, Boston.

Boss Spinner or Twister in woolen mill. Familiar with all kinds of woolen, shoddy and mixed goods. Davis & Furber, Johnson & Bassett and English mules. First class references. 32 years of age, American, 3281, Textile World Record, Boston, Mass.

Boss Spinner in woolen mill. Worked on all kinds of woolen, cotton and shoddy mixed goods. Familiar with Johnson & Bassett. Would prefer Furbush mules. First class recommendations. Age 29, American. 3287, Textile World Record.

Overseer of Spinning. American, with experience on nearly all classes of woolen and worsted goods, and on all machinery used in his work, wants position in the East. Best of references furnished. Wants first-class position. 3384, Textile World Record, Boston.

Overseer of Woolen Spinning, or would accept a good second hand position. American, 25 years of age; accustomed to wool and cotton mixes, wool and shoddy, wool pure cotton goods. Worked on the different kinds of machinery used in this work. 3410, Textile World Record, Boston.

Overseer of Woolen Spinning, 33 years of age, married, with 6 years' experience as overseer; worked on all kinds of yarns from 3/4 run to 10 run, and on nearly all the machinery used in spinning room. Prefers a position in New England. 3413, Textile World Record, Boston.

Overseer of Woolen Spinning. 30 years of age, with experience on all wool, all shoddy, wool and shoddy mixes, etc. Worked on D & F., J. & B. mules and some other makes. Prefers the East. Would consider second hand position in a large mill. 3431, Textile World Record, Boston.

Overseer of Wool Spinning. 39 years of age, with 15 years' experience as overseer on flannels, cassimeres, cheviots, kerseys and cotton mixes. Also on all machinery used in his work. Wants position in the East. 3434, Textile World Record, Boston.

DYERS.

Overseer of Dyeing. Position wanted by a man 43 years of age. Married. Scotch. Worked on cotton, wool and worsted dress goods knitting yarns. Good reference from mills in Scotland where he has been employed as manager of dye and finishing works. 3456, Textile World Record, Boston.

Overseer of Woolen Dyeing. Englishman, 40 years of age, with experience on all kinds of raw stock, fancy piece dyes, worsteds and indigoes. Been overseer 15 years in good mills. Wants a position in the East. Good recommendations. 3433, Textile World Record, Boston.

Overseer of Cotton Dyeing. 40 years of age, with experience on coarse and fine ginghams, dress goods, raw stock, Indigo blue, alizarine reds and all fancy colors, also on jig dyeing. Good references. 3428, Textile World Record, Boston.

Overseer of Woolen Dyeing. 31 years of age, English, married, with experience on blankets, flannels, cotton warp goods, kerseys, thibets, raw stock, etc. Wants a position in the East. Good references. 3438, Textile World Record, Boston.

Boss Dyer. Worked on wool worsteds, cotton raw stock and piece dyes. 47 years of age, married, Italian. Take a position at short notice. 3441, Textile World Record, Boston.

Boss Dyer. 40 years of age, German. Worked on raw stock piece dyes and indigo vats. Now out of work on account of the mill being closed. First class references. Could take a position at once. Worked in some of the best mills and can refer to same. 3440, Textile World Record, Boston.

WOOLEN CARDERS.

Overseer of Woolen Carding. American, 28 years of age, with experience as second hand and overseer in some of the largest mills in New England, wants position in the East. Worked on all classes of woolen goods, and on nearly all makes of woolen cards. 3355, Textile World Record, Boston.

Overseer of Carding. American, 40 years of age, with 8 years' experience as overseer, accustomed to all grades woolen and cotton and shoddy mixes, and to all kinds of woolen carding machinery, wants position in the Nqrth. 3358, Textile World Record, Boston.

Overseer of Carding. Age 26, American, unmarried, with 7 years' experience as overseer, wants position in New England. Had experience on wool, shoddy, silk noils, etc. Understands D. & F., Furbush and Cleveland cards. 3339, Textile World Record, Boston.

Overseer of Woolen Carding. American, 35 years of age, with nearly 15 years' experience as overseer, wants position in the East. Accustomed to cassimeres, cheviots, carriage cloth, blankets, etc., and nearly all machinery used in card room. 3342, Textile World Record, Boston.

Boss Carder in a woolen mill. Worked on all wools, cotton and shoddy mixes, and is familiar with Davis & Furber and Cleveland cards, and all makes of rub aprons and different rub rolls. 29 years of age, American, first-class references. No. 3284, Textile World Record, Boston.

Boss Carder or Spinner. Familiar with all kinds of American machinery, including Davis & Furber cards and mules; also Johnson & Bassett mules. Worked on all kinds of stock from the lowest to the finest grades of wool. 54 years of age; first-class recommendations. 3288, Textile World Record, Boston, Mass.

Boss Carder in a woolen mill. Worked on all grades of woolens, cotton and shoddy mixes. Familiar with all kinds of American machinery. First-class references; 31 years of age; German. 3316, Textile World Record, Boston.

Boss Carder in a Woolen Mill. Worked on satinets, cotton mixed dress goods, kerseys, etc. Could take a position at short notice; 34 years of age; Irish-American. 3319, Textile World Record, Boston, Mass.

Overseer of Woolen Carding or second hand in large mill. Worked on all wool shoddy and cotton mix, silk noil goods. 43 years of age, married. Good references. One worker in family for finishing room. 3444, Textile World Record, Boston.

Overseer of Carding in small mill or second hand in a good mill by a young man 25 years of age, married, American. Worked on all kind of woolen goods. D. & F., Cleveland, Lombard cards. Will go any place for a good position. 3452, Textile World Record, Boston.

Overseer of Carding and Spinning. Position in a knitting mill wanted by a man who has a wide experience as overseer. 40 years of age, married. Worked on D. & F., Lombard, Furbush cards and mules, also on Garnett machinery. 3454, Textile World Record, Boston.

Overseer of Carding in woolen mill. Position wanted by a man who has had experience on all wool, cotton and shoddy mixed goods. Worked on Platt Bros., D. & F. and James Smith carding machinery. American. 3459, Textile World Record, Boston.

Overseer Woolen Carding. Position by a man 33 years of age, married. Worked on kerseys, meltons, cheviots, blankets, robes, underwear and hosiery, felts and sale yarns. Worked on D. & F., Lombard, Cleveland, Furbush, Platt Bros., Thornton Bros., John Haigh, Barker, D. & F. and English condensers. 3462, Textile World Record, Boston.

Overseer of Woolen Carding. American, 30 years of age, with experience on wool, wool and shoddy mixes, wool and cotton mixes and silk noils, wants a position in the East. Worked on D. & F. and Lombard cards and also on English cards. 3427, Textile World Record, Boston.

Overseer of Woolen Carding. 32 years of age, married, wants position in the East. Accustomed to cassimeres, cheviots, dress goods, wool, cotton and shoddy mixes, all wool, from 1 to 7 run. Worked on the machinery used in this work. 3436, Textile World Record, Boston.

WOOLEN WEAVERS.

Boss Weaver, second hand or loom fixer. Age 30; married. Wants $3 per day. Men's wear, dress goods and all kinds of fancy worsteds. Crompton & Knowles looms. Reference. 3182, Textile World Record.

Boss Weaver and designer. All grades of fancy dress goods, woolen and worsted, cotton and cotton mix kerseys, coverts and venetians. Plain and fancy men's wear. 3181, Textile World Record.

Woolen Boss Weaver. Worked on worsteds, woolens of all kinds, also dress goods. American; 38 years of age; married. 3231, Textile World Record.

Woolen Boss Weaver. Worked on plain and fancy piece dyed worsted, woolen, plain and fancy flannels, also fancy mercerized rain cloths. 29 years of age; Canadian; married. First-class references. 3251, Textile World Record.

Young Man, American, wants position as boss weaver or assistant superintendent. Has worked on fancy worsteds, cassimeres and cheviots. Can also design. 1712, Textile World Record.

Overseer of Weaving or designer. Familiar with all kinds of dress goods, lenos, lappets or any kind of fancy Jacquard weaving. Understands all kinds of English and American machinery. Age 46, English. First-class references. 3267, Textile World Record.

Overseer of Weaving. Worked on worsteds, cassimeres, dress goods, and all kinds of woolen goods. Crompton & Knowles looms. First-class references; American. 45 years of age. 3262, Textile World Record.

Boss Weaver in a woolen mill. Worked for the past twenty years in one of the best woolen mills in Massachusetts and eight years in the same mill for a former company. 57 years of age, married, English, first-class references. No. 3270, Textile World Record, Boston.

Overseer of Weaving, or would consider a good loom fixing job in a woolen mill. Age 47; Protestant; good references. 3247, Textile World Record.

Overseer of Weaving. 40 years of age, with 20 years' experience fixing and weaving in New England. Understands plain and fancy woolens and worsteds. Crompton and Knowles looms. Good references. 3369, Textile World Record, Boston.

Overseer of Weaving. 36 years of age, with 18 years' experience in a large mill in Massachusetts. Accustomed to woolens and worsteds, high and low grade, and to all machinery used in weave room. Prefers position in or about New England. 3373, Textile World Record, Boston.

Overseer of Weaving, or weaver and designer. American, 40 years of age, with experience on all grades men's wear and all makes of woolen looms, pickers, spoolers, twisters, etc., wants a position in the East. 3379, Textile World Record, Boston.

Boss Weaver in a Woolen Mill, or a fixing job with chance of advancement. Worked on worsted dress goods, cassimeres and cotton warp goods, beavers, etc. First class recommendations; 32 years of age, American. 3329, Textile World Record, Boston, Mass.

Boss Weaver in a Woolen Mill or superintendent of small mill. Worked on ladies' dress goods, men's wear, flannels, blankets, Indian robes, both jacquard and chain loom work. 38 years of age; married; first-class references. 3324, Textile World Record, Boston, Mass.

Boss Weaver in Woolen Mill, or would accept a good loom fixing position. Worked on satinets, cotton and woolen warp goods, sheetings, shirtings and ducks. Also worked on cotton and woolen jute bagging. 45 years of age. 1806, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving or boss dressing. Worked on all kinds of woolen and worsted dress goods. A good manager of help. Could handle both dressing and weaving in medium sized mill. First-class references. 42 years of age. 3293, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving. American, 40 years of age, married, with experience on worsteds, cassimeres, kerseys, dress goods, satinets, etc., wants a position in the East. Has worked on all machinery used in this work. 3412, Textile World Record, Boston.

FINISHERS.

Overseer of Finishing. Position wanted by man in the prime of life, energetic and a hustler, with 20 years of experience as overseer on all classes of goods from loom to case, in first-class mills. Age 46; married; steady, temperate and reliable. 3333. Textile World Record, Boston, Mass.

Overseer of Wet Finishing. Worked on all kinds of woolen goods, both high and low stock. Would accept a position at short notice. 47 years of age; married; first-class references. 3322, Textile World Record, Boston, Mass.

Overseer of Finishing. Age 30, American, unmarried, with 6 years' experience as overseer, wants position in New England. Had experience on satinets, unions, and all goods where cotton warp is used, also on nearly all machinery used in making these goods. 3335, Textile World Record, Boston.

Overseer of Finishing. 37 years of age, with experience in some of the best mills in New England. Worked on all kinds of woolen and worsted face finished goods and on about all kinds of machinery used in finishing room. Prefers the East. 3344, Textile World Record, Boston.

Overseer of Woolen Finishing or assistant superintendent, American, 45 years of age, with knowledge of designing; understands figuring yarns and lay outs; worked on beavers, kersey, woolen and worsted suitings, dress goods, coverts, cassimeres, cheviots, etc., and on all kinds of machinery used in his business. 3415, Textile World Record, Boston.

Overseer of Woolen Finishing and Dyeing. American, 26 years of age; accustomed to plain and fancies, dress goods, thibets, cotton warps, worsted mixes, etc., from loom to case. Also all machinery used in this work. Prefers a position in the East. 3387, Textile World Record, Boston.

Overseer of Woolen Finishing. American, 37 years of age, with experience on fancy cassimeres, coverts, friezes, thibet, kerseys, dress goods, etc., and on all makes of finishing machinery. 3407, Textile World Record, Boston.

Overseer of Finishing, first-class man, with experience and best of recommendations, is seeking position in the East. Is accustomed to all kinds and classes of woolen goods and the machinery used in this work. 3396, Textile World Record, Boston.

Overseer of Woolen Finishing, 33 years of age, married, with experience on beaver, kersey, cassimere, covert, thibet, worsted, dress goods, government goods, etc. Understands Curtis & Marble, Park & Woolson machines. 3402, Textile World Record, Boston.

Overseer of Finishing. American, first class in every respect, with good references, wants position. Is accustomed to all classes woolen and worsted goods and all kinds of machinery used in his work. 3383, Textile World Record, Boston.

Overseer Finishing, or Stock Dyeing and Finishing. Worked on Union cassimeres, satinets, all wool cassimeres, cheviots, dress goods, meltons and kerseys; 29 years of age, single, Scotch, with first class reference from past employers. 3449, Textile World Record, Boston.

Overseer of Woolen Finisher. 42 years of age, with experience on kerseys, meltons, thibets, beavers, broadcloths, worsteds, dress goods and on nearly all classes of woolen and worsteds, wants position in the East. Worked on all machinery used in modern mill in this work. 3432, Textile World Record, Boston.

Overseer of Woolen Finishing. 44 years of age, married, Scotch. Worked on ladies' dress goods and face finished goods from loom to case. 3446, Textile World Record, Boston.

Overseer Wet and Dry Finishing. American, 30 years of age, with experience on nearly all grades of woolen mixes, cotton warp goods, steam face goods, piece dye, etc. Six years as overseer, with good references. 3376, Textile World Record, Boston.

Overseer of Finishing. Familiar with all kinds of woolen and worsted men's wear, dress goods, including high lustre on ladies' and men's face finished goods, overcoatings, meltons and unions. 39 years of age; American; first-class references. 3271, Textile World Record, Boston, Mass.

KNITTERS.

Superintendent of Hosiery Mill. American, 40 years of age, with a number of years' experience as overseer, would accept a good position anywhere in United States. Worked on cotton and lisle hosiery, fashioned, seamless, lace, embroidered and plain, and on nearly all makes seamless machines and all others used in an up-to-date mill. 3352, Textile World Record, Boston.

Superintendent of Knitting Mill. American, 28 years of age, with experience on flat wool and cotton, all wool sweaters, rib goods of wool, worsted cotton and cotton plaited. Understands nearly all kinds of machinery used in making these goods. 3348, Textile World Record, Boston.

Overseer of Knitting. American, 31 years of age, with 10 years' experience in knitting room as second hand and overseer. Worked on men's gauze underwear, and on plain woolen and plush work. Wants position in the East. 3350, Textile World Record, Boston.

Superintendent or boss knitter. Worked on men's fine balbriggan, ladies', men's and children's wool underwear. Familiar with all kinds of knitting machinery. 27 years of age, American. 3259, Textile World Record, Boston, Mass.

Wanted. A position as general or knitting machinist in knitting plant. Twenty years' experience with circular and flat latch needle machines, both American and foreign, for fashioned or cut underwear, sweaters and jackets, or gloves and mittens. Thoroughly familiar with all modern automatic devices, also loopers and Singer and Union Special sewing machines of all kinds. Address Knitting Machines, Old City Hall, Minneapolis, Minn.

Overseer of Dyeing or Second Hand. American, 25 years of age; worked on woolen piece dyes and raw stock and on different kinds of machinery used in dyeing. Would accept a position anywhere that would mean advancement. 3418, Textile World Record, Boston.

Overseer Foxer on Looper Machines. Accustomed to silk, wool, cotton or lisle. American, 25 years of age and married. Wants a position in Mass. 3417, Textile World Record, Boston.

Overseer of Woolen Dyeing. American, 34 years of age; accustomed to broadcloths, kerseys, dress goods, raw stock, piece dyes and to all machinery used in his work. A1 man, with best of recommendations. 3180, Textile World Record, Boston.

Overseer Milling, Mercerizing and Bleaching, 45 years of age, with large experience in England and Scotland on all classes of cotton goods and the machinery used in this work. 3414, Textile World Record, Boston.

Superintendent or Assistant, 25 years of age, with experience on knitting and sewing machines and executive ability to handle help, wishes position in an underwear or hosiery mill. Speaks English and German; A1 references as to ability and character. Anywhere in U. S. except the South. Will start with reasonable wages and chance for advancement. 3314, Textile World Record, Boston.

Boss Knitter or Machine Fixer on plain lace and drop stitch hosiery, 22 years of age, single; worked on Mayo and all kinds of loopers, ribbers and union special machines. 3237, Textile World Record, Boston.

Foreman Looper. American, 31 years of age, with experience as fixer on rib frames, body and sleeves, hosiery and looper. Worked on misses', boys' and infants' ribs, women's and children's underwear. Accustomed to all machinery used in this work. 3408, Textile World Record, Boston.

Boss Knitter in small or second hand in large mill; 24 years of age, American. Worked on wool, worsted and medium cotton from 10 gauge to 28 on Tompkins Bros. spring needle. McMichael, Wildman, Nye & Tredrick Branson latch needle, Paxton & O'Neil Branson 3/4 automatic. 3460, Textile World Record, Boston.

Boss Knitter or Superintendent of knit underwear. Worked on all kinds of ribbed underwear and all makes of machinery. First-class recommendations. 3306, Textile World Record, Boston, Mass.

Are You Contented ?

Thousands of American School of Correspondence students have received better positions with increased pay as a result of our instruction. We have more complete Textile Courses than any similar school in existence, for, in addition to the subjects taught by other institutions, we teach Woolen, and Worsted Finishing, Cotton and Wool Dyeing and Knitting.

In addition to a regular scholarship, students receive *free* our five volume Cyclopedia of Textile Manufacturing. You can't afford to be without this work if you expect to succeed.

Fill in the attached coupon and mail *to-day*. *It will not bring an agent to annoy you* and will prove a step in the right direction.

American School of Correspondence,
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Coupon. Cut out and mail to-day.

AMERICAN SCHOOL OF CORRESPONDENCE, Chicago, Ill.

Please send your special Textile Bulletin and advise me how you can qualify me for the position **marked X.**

Woolen & Worsted Supt.	Cotton Yarn Supt.
Woolen & Worsted Designer	Cotton Designer
Boss Woolen & Worsted Spinner	Boss Cotton Spinner
Boss Woolen & Worsted Carder	Boss Cotton Carder
Boss Finisher	Cloth Examiner
Boss Weaver	U. S. Inspector
Boss Dyer	Buyer
	Knitting Mill Supt.
	Boss Knitter

Name _____

Street and No. _____

City _____ *State* _____

Tex. W. Rec 2-05

MISCELLANEOUS.

A Silk Superintendent with A 1 references, 20 years' experience in manufacturing dress goods, ties and novelties, desiring to make a change on account of climate, will consider all propositions south of New York and Pennsylvania States. Address C. R., care Textile World Record, Boston.

Loom Fixer on Silk, or Foreman in small shop. 38 years of age, married. Wants position in Philadelphia if possible. Been fixing 16 years and on plain and fancy goods. Understands English plain looms and Knowles box looms. 3386, Textile World Record, Boston.

Overseer Cloth Room. Worked on lenos, lawns, satteens, twills and most all kind of cotton goods; 36 years af age; married. Will go any place for a good position. English. 3451, Textile World Record, Boston.

Overseer of Silk Weaving. Worked on all kinds of plain silk goods. Familiar with Crompton & Knowles, Stafford & Thayer looms. Good references. 3303, Textile World Record, Boston, Mass.

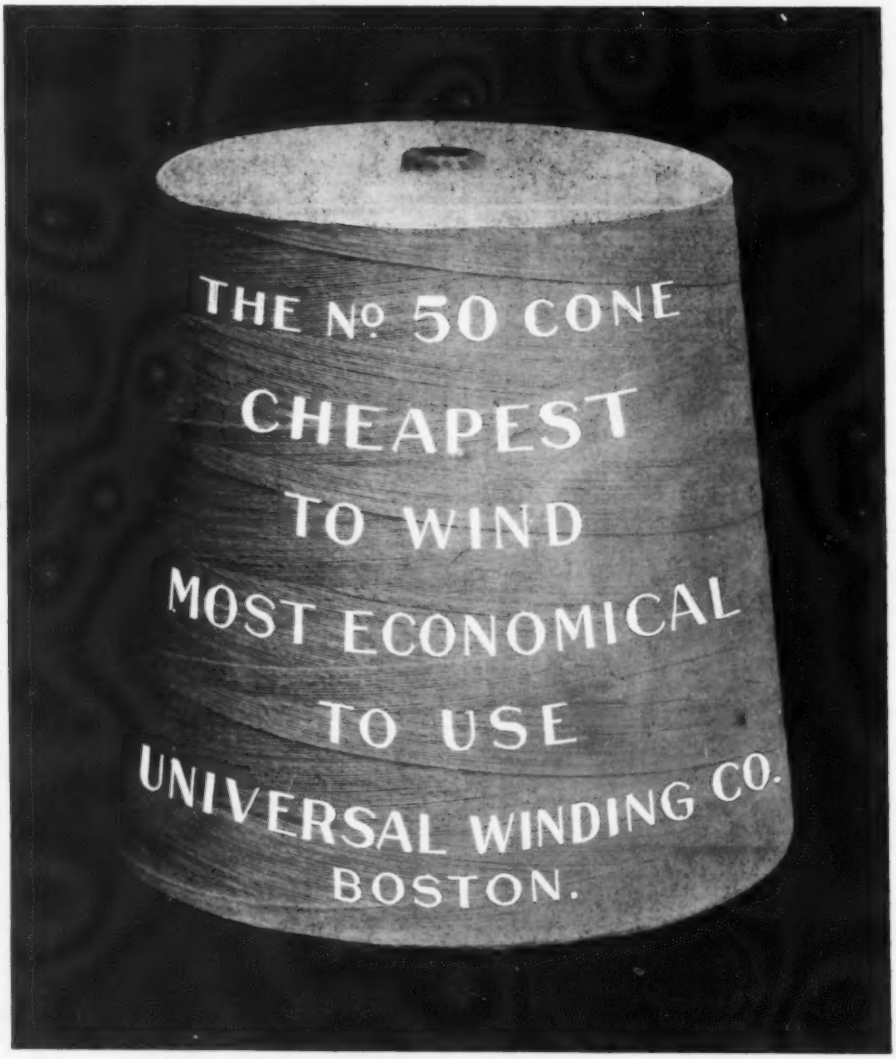
MEN WANTED.

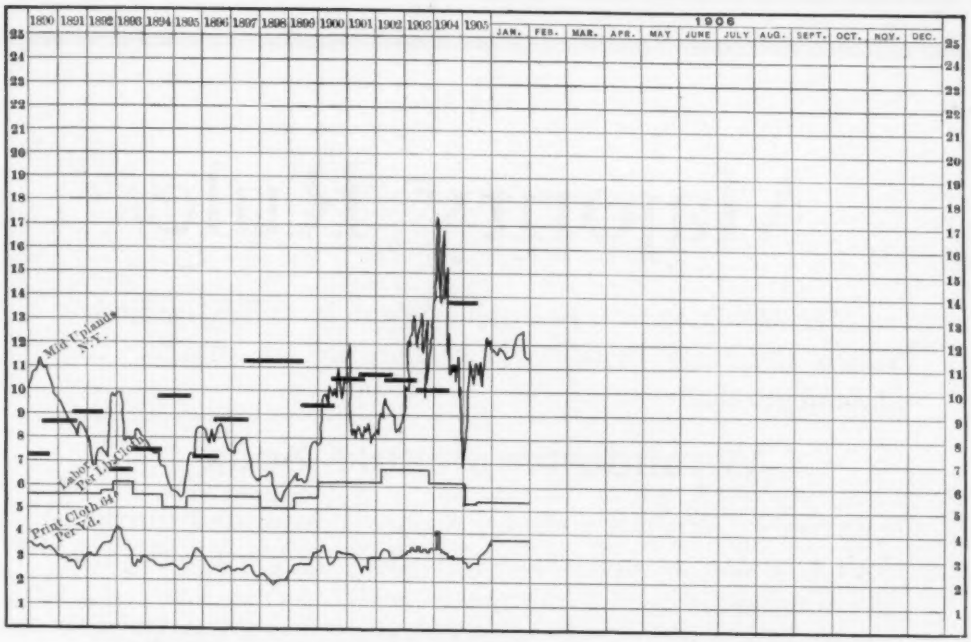
WOOL OIL SALESMAN.

Old Established Refiners—with well known goods in use 25 years—want an energetic man to represent them in New England. One familiar with use of such oils, preferred. Salary and expenses paid. Correspondence confidential.

Address, Oil, care of Textile World Record, Boston, Mass.

Wanted. An experienced cutter and finisher on men's balbriggan and Arctic knit underwear. State experience and salary expected. Address, Arctic, care Textile World Record, Boston.


THE No. 50 CONE
CHEAPEST
TO WIND
MOST ECONOMICAL
TO USE
UNIVERSAL WINDING CO.
BOSTON.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905
1906
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mid Uplands N.Y.
Labor Per Hour
Print Cloth 64x64 Per Yd.

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

Cotton Market.

Prices have declined slightly under the influence of the census report of cotton ginned, which at 9,998,111 bales, was larger than expected. The firm stand taken by Southern planters in favor of holding cotton for higher prices, and the large consumption by mills in all parts of the world have prevented any material break in quotations. Nevertheless spinners have taken but little cotton, a fact which is significant of further resistance to the upward movement. High prices have never failed to restrict consumption and the present situation in the cotton market is not likely to supply an exception to the rule. The efforts of the planters to obtain 15 cents a pound for their cotton, and the refusal of spinners to pay 12 cents are perfectly legitimate, marking as they do the opposing forces of supply and demand. There is a point beyond which the spinner cannot go and which will mark his turning to restricted consumption. Already there is talk of short time in Lancashire, which will materialize into action, if, when the present stock of cheap cotton is used, the buyers of yarns and cloth refuse to pay the advance made necessary by 12 or 15-cent cotton. The movement into sight has been small during the past month. For the period since September 1, the Chronicle reports the movement into sight to January 26 for a series of years as follows:

1905-6, Jan. 26	.....	7,648,716 bales.
1904-5, Jan. 26	.....	8,683,252 bales.
1903-4, Jan. 29	.....	7,922,794 bales.
1902-3, Jan. 30	.....	7,912,521 bales.
1901-2, Jan. 31	.....	7,875,563 bales.
1900-1, Feb. 1	.....	7,583,119 bales.

The same authority estimates the world's stock of cotton in sight on January 26 at 5,375,809 bales, as compared with 4,578,617 bales on same date in 1905, 4,009,654 bales in 1904, and 4,120,228 bales in 1903.

North Carolina, Graham. Robert S. Mebane has been made general manager of the Oneida Cotton Mills and Belmont Cotton Mills, of which L. Banks Holt is owner.

North Carolina, King's Mountain. It is reported that C. M. Cooke, Jr., and associates are interested in erecting a new mill here. They propose incorporating a company with capital stock of $75,000, and will equip mill with 3,000 spindles for making fine lace curtain yarns.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.

Phone Connections. Works, 2046-48 Amber Street. PHILADELPHIA, PA.

Majority Rule

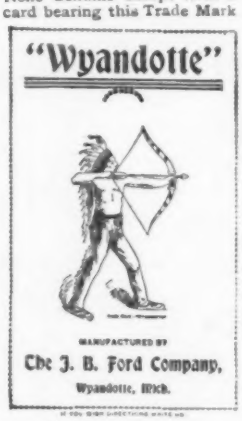
Mr. Mill Man, are you using Wyandotte Textile Soda? When the facts justify us, as they do, in making the statements that

Wyandotte Textile Soda

is not only a superior soda for scouring wool and finished cloth but also an inexpensive article, you must recognize this material as one having much merit.

If you are not using this material you are acting against your own interests. The facts are against you. The majority generally rule, but we don't ask you to accept the opinion of the majority- We want you to make your own rule, for your own work. We want you to place an order with your supply house for this material. Use it according to directions. You to be the judge of its effectiveness. Try it and try it now, get all the good from it possible.

None Genuine except with a card bearing this Trade Mark



In Every Package.

The J. B. Ford Co.,

SOLE MANUFACTURERS,

Wyandotte, Mich.

THIS SODA WAS AWARDED THE HIGHEST PRIZE — GOLD MEDAL — AT BOTH THE ST. LOUIS AND PORTLAND EXPOSITIONS.

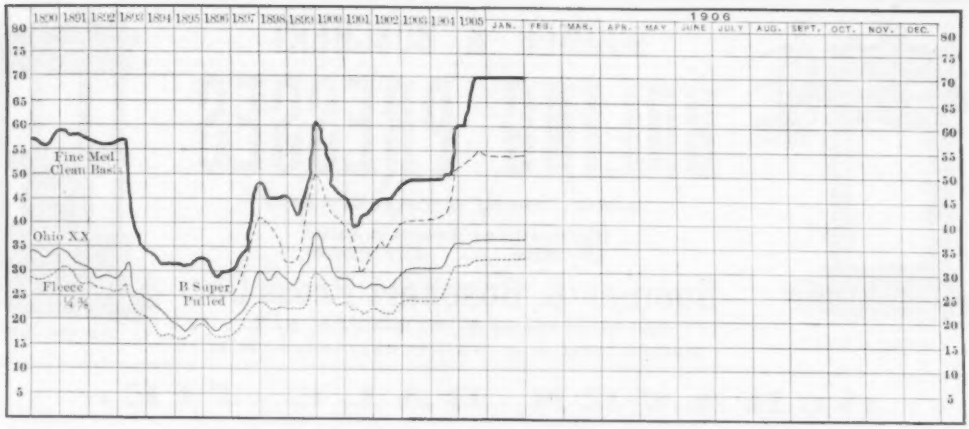

1900 1901 1902 1903 1904 1905 1906
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5
Fine Med. Clean Basis
Ohio XX
Fleece
B Super Pulled

CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

Wool Market.

While the volume of business has been moderate, there has been a good inquiry for wool, and prospective buyers have shown a willingness to buy at slight concessions in price. These concessions have not, however, been made by the owners of the wool, and in many cases orders have been placed at the seller's original quotations. Those who hold what wool is for sale are very firm in their ideas of price and point to the unquestionably strong statistical position to prove the absence of any good reason for lower prices.

General prosperity throughout the country, a small supply of domestic wool and a high tariff on foreign wool, make a combination that buyers cannot break.

While the demand for worsteds shows no signs of abatement, one result of the high prices for worsted wool is seen in the increased demand for clothing wool, pointing unmistakably to a coming revival in corded woolens. The mills are busy on light weight goods and a few manufacturers expect to cut the heavy-weight fabrics out this year, letting the new light-weight season follow the continuation of the old, without interruption. Others will reduce their heavy lines of samples below the ordinary number. Wool is being consumed by the mills at an unprecedented rate and it is believed that the stocks at the mill are low. Wool buyers who have reached the West find much of the new clip already under contract, and it is believed that at the high prices prevailing the new wool will be rapidly transferred to the possession of Eastern dealers and manufacturers. The foreign markets continue strong, largely under the influence of the demand from the United States.

*Wisconsin, DePere. The large addition to the Oneida Knitting Co.'s plant has been completed. This mill is run on shawls, toques and fancy knit goods.

*Virginia, Portsmouth. The knitting mill operated by the Portsmouth Cotton Manufacturing Company, whose lease of the plant has recently expired, has been secured by William Sloane & Co., of Berkeley, Va. They will operate the mill under name of the Tidewater Knitting Mills and will make some necessary changes and additions.

STANDARD QUALITY COMBED RAMIE TOPS and NOILS a Specialty. RAMIE YARNS in All Numbers for All Purposes.

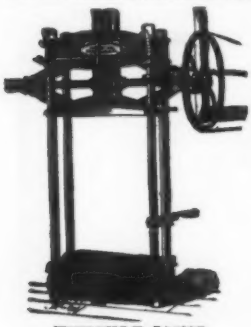
Wool, Mohair, Camel Hair, Silk, and Ramie Tops and Noils.

FRANK A. TIERNEY,
Wool, Tops, Noils, Yarns.

Woolen, Worsted, Mohair, Ramie and Silk Knitting Yarns.

All Kinds of Yarn for Weaving Purposes. Special Fibres and Novelties for Woolen, Cotton and Silk Manufacturers.
Room 203, Wool Exchange Building, 260 West Broadway, New York.

Wool and Woolen Goods Made NONSHRINKABLE
by the use of "Nevershrink Process."
May be applied at any stage of manufacturing. Write for Booklet.
CHARLES H. HEYER,
1501 Real Estate Trust Bldg. Philadelphia, Pa.
FOR WOOL
Nevershrink PROCESS
Registered.



KNUCKLE JOINT.

BOOMER & BOSCHERT

BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

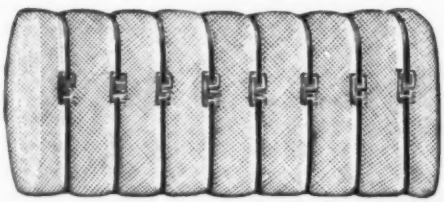
338 West Water S., SYRACUSE, N. Y.

Southern Agent, A. H. WASHBURN, Charlotte, N. C.

HYDRAULIC.

DEHAVEN BALE TIE.

Use De Haven Bale Tie and save claims for damaged goods.



The only method of baling cotton that insures the goods arriving at destination in good condition.

The days of rope for baling cotton are over. All up-to-date mills are now using De Haven's galvanized bale tie with Patented buckle. It makes a neater and cheaper package and saves the shipper those annoying claims for damaged goods so common with the old method of baling. Write us for samples and prices.

DE HAVEN MANUFACTURING CO., BROOKLYN, N. Y.

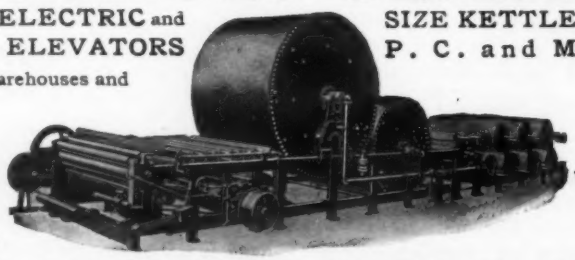
The COHOES SLASHER.

BELT-DRIVEN, ELECTRIC and HAND-POWER ELEVATORS

For Cotton Mills, Warehouses and Factories.

PULLEY BLOCKS.

OVERHEAD TRACKS.



SIZE KETTLES. REPAIRS for P. C. and M. MULES and EMPIRE LOOMS.

WATERWHEEL GOVERNORS.

The COHOES IRON FOUNDRY & MACHINE CO., Cohoes, N. Y.

For 25 YEARS We have held OUR REPUTATION as Progressive Manufacturers. Do not forget this when ordering GAGES.

ORIGINAL SINGLE BELL CHIME WHISTLE

Harmonious
Far Reaching
Pleasing.

A Truthful Gage is the only GOOD GAGE.

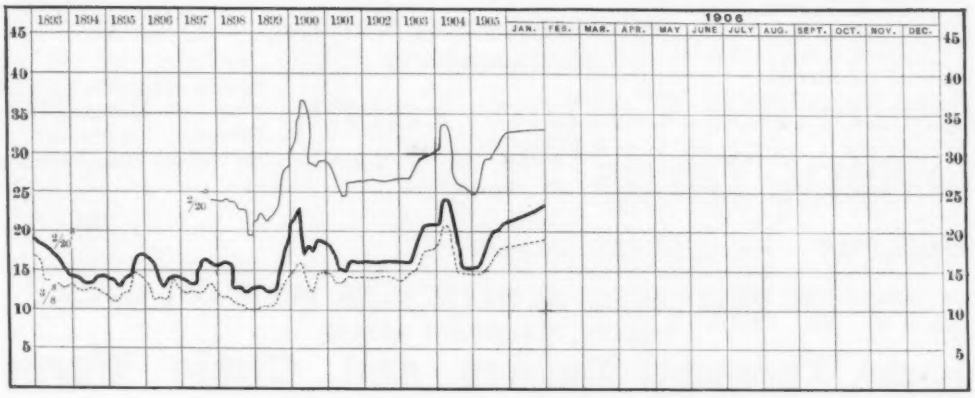
This Company manufactures, besides the above a large variety of articles used in connection with steam engines and boilers, all of which are standard quality, and may be relied upon. *Send for Catalogue.*

CROSBY STEAM GAGE & VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn Market.

There has been no material weakening in the price of yarns. Spinners are so well provided with orders that yarn prices have to a considerable extent been removed from the influence of fluctuations in the raw cotton market. The difficulty met by knitters in selling goods at an advance commensurate with the increased cost of yarn has made them more decided in their refusal to pay present prices. This has restricted new orders to actual requirements. There is general feeling among buyers that yarn prices are higher than is warranted by the cost of production, and that it is advisable to go short of yarn until conditions are readjusted. They argue that the next change is likely to be downward, and that the spinner can make a fair profit at a considerable reduction from current quotations. As long, however, as the spinner is as well provided with orders as at present a decline is not likely to occur. Moreover, there is the possibility of higher prices for cotton, brought about by a combination of the planters and speculators.

Eastern Cops.

6's	19½
8's	20
10's	20½
14's	21½
16's	22
18's	22½
20's	23
22's	23½
24's	24
26's	24½
30's	26
34's	27½
36's	28½
40's	29½

On cones, ¾c. more up to 14's; 1c. more from 15's to 22's; 1½c. from 23's to 35's, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12's	23
14's	24
18's	24½
20's	25
24's	26
26's	28
30's	30
36's	32
40's	35
45's	38
50's	42
55's	43-45
60's	46-48

Eastern Two-Ply Warps, Carded Peeler.

2/30's	30
2/36's	32
2/40's	35
2/45's	38
2/50's	44
2/60's	47

Egyptian Weaving Yarns.
Single Skeins Combed.

30's	36
36's	38
40's	40
45's	43
50's	48
55's	52
60's	55
70's	58

Philadelphia Market.

The market on cotton yarn has been forced by various influences and conditions to a very high basis. The exceptional demand on certain numbers has placed the price of these considerably above the price of cotton.

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns — Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns — Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps — on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

WALCOTT & CAMPBELL SPINNING COMPANY

Fancy Hosiery Yarns

IN ALL COLORS

New York Mills, Oneida Co., New York.

Wiscasset Mills Co. | Patterson Manfg. Co.
Efrid Manfg. Co. | Tuscorora Cotton Mill.

HIGH GRADE HOSIERY YARN

White and Colors. All Numbers.

Sewing Twines on Cones and Tubes.

SPECIALTIES IN WEAVING YARN.

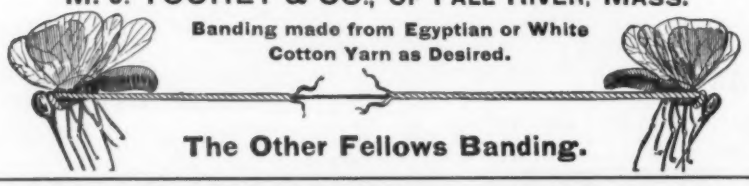
Black and white. Double and twist for woolen trade.

CANNON MILLS, 55 Leonard St New York.

THESE MULES CANNOT BREAK THE BANDING —MADE BY—

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

HOUSATONIC, MASS.

COTTON WARPS

4s to 60s.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops From 30s to 50s from American & Egyptian Cotton

Spinners have been firm on prices in their endeavors to maintain them, but there has been some weakness during the month, probably on the part of dealers that have bought yarn in a speculative way, and are willing to dispose of it at a little below present prices.

Hosiery and underwear manufacturers report that they are not able to obtain new business at an adequate advance, and there is considerable indifference on the part of those knitters that are compelled to buy yarn today, as to whether they run their mills or not. It is a question now as to whether parties holding cotton or the jobbers of manufactured goods will hold out the longest. We are inclined to believe that cotton will be held high throughout the next few months.

Southern frame spun cones:—

7s and coarser	19½
8s and 9s	20
10s	20½
12s	21
14s	21½
16s	22
18s	23
20s	23½
22s	24-24½
24s	24½-25
26s	25-25½
30s	27-27½
40s	34
50s	35

Southern high grade mule yarn:—

Cones.

10s	21½
12s	22
14s	22½
16s	23
18s	23½
20s and 22s	24½-25
24s	25½

Southern frame yarn, lower grades:—

6s and 8s	19½
10s	20

Eastern cones (high grade quality):—

10s	22
12s	22½
14s	23
16s	23¾
18s	24¼
20s and 22s	24¾-25¼

Skein yarn (mostly Southern):—

4's and 8's soft	19½
10's to 12's	20-20½
14's to 30's	21-22½
22's	23
14/2	22
16/2	23
20/2	24½
30/2	28
40/2	34
16/3 slack	22
12/3 slack	21
8/3 carpet	19½
8/3 slack	19½
9/4 slack	19½

PAULSON, LINKROUM & CO.
Commission Merchants
COTTON YARNS OF ALL DESCRIPTIONS
87-89 LEONARD STREET, NEW YORK.
118 Chestnut St., Phila. 210 Munroe St., Chicago, Ill.
Cash Advances, Cash Sales and Prompt Returns.
Consignments and Correspondence Solicited.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
FOR ALL PURPOSES.
122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

H. D. Salkeld & Bro.
COMMISSION MERCHANTS
With FRED'K VIETOR & ACHELIS
COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & Co.
COTTON YARNS
MERCERIZED YARNS } ALL NUMBERS FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

MOELLER & LITTAUER,
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey-Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK

SPINNING MILLS:
NEW BEDFORD, FALL RIVER, TAUNTON.

DYE AND BLEACH WORKS:
FALL RIVER, TAUNTON.

NEW ENGLAND COTTON YARN CO.

KNITTING AND
WEAVING YARNS

EVERY DESCRIPTION AND FORM
Gray, Bleached, Dyed and Mercerized
600,000 MULE AND FRAME SPINDLES

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HENRY C. SIBLEY, Treasurer.

ARTHUR R. SHARP, General Manager.

Executive Office:
141 Milk Street, Boston.

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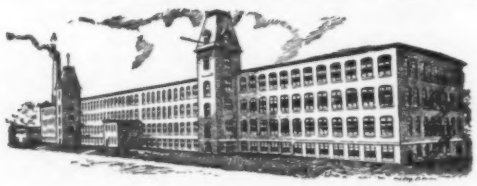
CHICAGO, cor. Clark and Adams St.
NEW YORK, 73 Worth St.
PHILADELPHIA, 213 Chestnut St.

C. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.,

Formerly E. JENCKES MFG. CO.

Carded and Combed Cotton Yarns for Weavers and Knitters.
Double and Twist Yarns for Woolen Trade.

PAWTUCKET, R. I.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND
FITCHBURG, MASS. WARPS

Indian Orchard Company
Cotton Warps and Yarns.
In Gray and all Colors, Single or Two or more Ply, and Cable Cord
Novelty Yarns.
in Various Patterns, Colors and Twists.
Carded and Colored Cotton.
For Mixing with wool, Machined or in Roving.
Indian Orchard, Mass

Warps (Southern):—

10s to 12s	20½-21
14s	21½
16s	22
20s to 22s	23-23½
26s	24½
14/2	23
16/2	24
20/2	25
24/2	26
30/2	28
40/2	34

Mixed colored yarns (mock twist, half colors):—

6's to 10's	21-22
12's to 14's	22½-23
16's to 18's	23½-24

Mock Egyptian, 2c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Worsted Yarn.

Spinners have many orders booked for delivery way into the present year. These orders have been placed largely on speculation and much depends on the coming heavy weight season. At the present writing only the cheaper lines have been opened and therefore no exact prediction can be made as to the final outcome, but so far as can be seen the indications point to the purchase of the medium priced grades of cloth.

Buyers are unwilling to purchase largely of the all cotton worsted and are unable to pay the high advance for the high class fancy worsted. The range then seems to be for mercerized worsteds of a good grade at a popular prices for the high end of the market, together with piece dye cheviots, and for the low end cloth made with a coarse grade of worsted made from woolen spun yarn warp and worsted filling imitating all worsted cloth.

Formerly in making these cheviot piece dyes the weavers used worsted warp and wool spun filling, but this combination did not give satisfaction and the demand for the cloth was small. At this time the process has been reversed, the samples now shown being made from woolen spun yarn warp and worsted filling with the result that many good orders have been secured.

The heavy weight season will be in full swing between now and February 15th. So far orders have been coming in slowly; buyers are taking hold carefully and while it will be a worsted season no such volume of orders will be placed as last season, as manufacturers are unable to convince them of a further advance in material. It is believed that certain mills with popular lines will sell up largely, while others will be unable to secure orders to run them full during the whole season. This will affect the worsted spinners, as many of the weavers will be unable to give spin-

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps,
Cones, Cops,
Tubes
COTTON YARNS
426 and 428
Market St., Phila.
Theo. H. Strouse & Co.

Ballou Yarn Co.
PROVIDENCE, R. I.
Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers.
GASSED.·.YARN.·.SPECIALTIES

CELEBRATED BRAND PYRAMID TRADE MARK LACINGS
For Underwear, Overshirts and Sweaters,
JOHN CATHCART & CO.,
115 Franklin Street, NEW YORK.

LACINGS FOR OVERSHIRTS and UNDERWEAR.
Tipped and Tasseled.
Hepner & Horwitz, 30 Howard St., N. Y.

F. C. BARTON
MANUFACTURER OF LILY BRAND NARROW FABRICS
RIBBONS, TAPES, BINDINGS & NON ELASTIC WEBBINGS
54 FRANKLIN STREET, NEW YORK

C. MOORE & CO.,
Manufacturers of
TWINES, THREADS AND YARNS,
Jacquard Harness Twines of all kind
on hand and made to order.
S.W. Cor. Fifth and Market Sts., Phila.

You Save Enough Insurance to Pay for the Equipment.
So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time Send for particulars.
Pettes & Randall Co., 150 Nassau St., New York

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at
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Office
100 Boylston St., Boston, Mass.

French System. **B. F. BOYER CO.,** Bradford System.

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, Delaware and Cooper Streets. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,
EATON RAPIDS, MICH.

EDDY & STREET,
Cotton, Woolen,
Yarns and Braids
Worsted, Spun Silk.
PROVIDENCE, R. I.

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TRADE MARK

Manufacturers of
Tapes, Webbing and Bindings.

COTTMAN and G STS., PHILADELPHIA
Ryer's Station, P. & R. R. R.
Bell Telephone, 203 Cheltenham.

YARNS Solis, Boston.
77
SUMMER STREET.
ANDREW J. SOLIS, Jr. & CO.

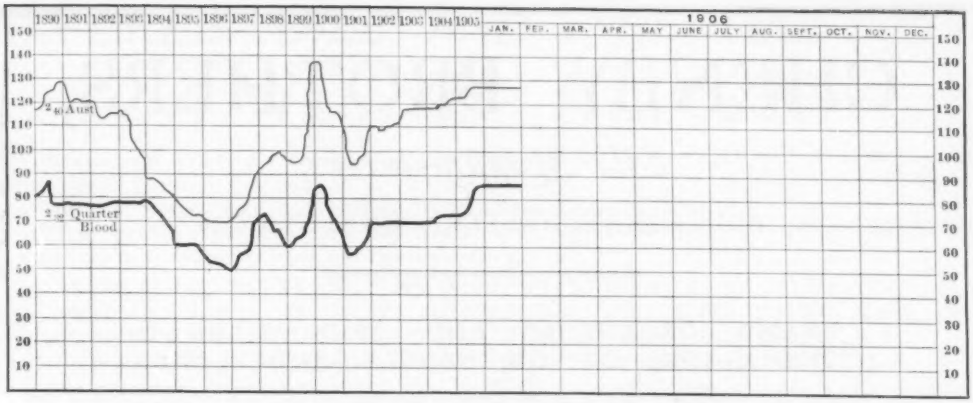


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

ning instructions for the yarn ordered earlier in the season on speculation. Undoubtedly much woolen spun yarn will displace worsteds, especially for warps.

Those who have not bought too far ahead on speculation state that with worsted at its present high level the only safe way is to order from hand to mouth. Although an advance has been secured on cloth, yet no weaver using straight worsted can get an advance that will take care of the unprecedented advance in worsted yarn. Those using the higher grade yarns and the lower grades have felt this advance most and weavers making high grade fancy worsteds and such cloths as bunting and dress goods find it difficult to know just what the outcome is to be. The weavers using the medium grades will undoubtedly secure most of the business.

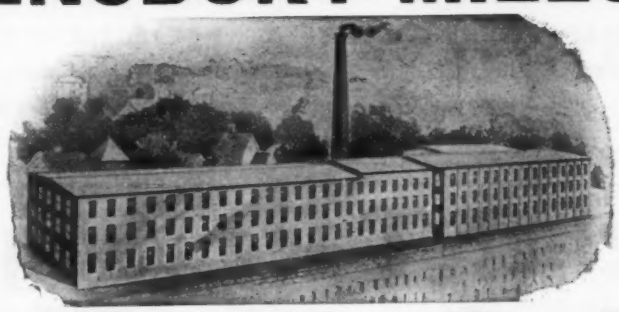
Many of the weavers and spinners have advanced wages from 5 to 10 per cent. Some weavers refused to pay this advance and the result has been several strikes. In one instance the weaver, expecting a strike that would last through the heavy weight season, sold his yarn supply of over 100,000 pounds. The operatives saw a new light and decided to return at the old wages.

The past season has been very prosperous for the spinners and many orders have been booked for the present heavy weight season and also for the next light weight season, as the demand has been so great that weavers have been unwilling to take chances in securing yarn. If the coming heavy weight season can stand the advance weavers have been obliged to place on their cloth because of the high price of yarn, spinners will be unable to make deliveries fast enough to take care of their customers. But if the heavy weight season is a failure in a slight degree for any reason, many

QUEENSBURY MILLS WORCESTER MASS.

MOHAIR TOPS AND YARNS FOR WEAVING

LUSTRE YARNS FOR SERGE LININGS ALPACA YARNS



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DRESS GOODS YARNS KNITTING YARNS WORSTED YARNS

MOHAIR

CHENEY BROTHERS,

Silk Manufacturers,

SOUTH MANCHESTER, CONNECTICUT.

TRAMS, ORGANZINE AND SPUN SILKS IN THE HANK, OR ON SPOOLS AND CONES.

SILKS FOR ELECTRICAL USES, INSULATION AND SPECIAL PURPOSES MADE TO ORDER.

KNITTING SILKS, RIBBONS AND PIECE GOODS FOR TRIMMING KNIT GOODS.

Pure Dye and Fast Colors Warranted.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.

Crochet Lace Edgings

Spun Silk, Splicing Yarn, Mercerized Yarns, Cotton Warps, Sewing Threads, Tapes, Braids, Domets, Cambrics, Silesias. : : :

Write for Prices and Samples. **George W. Chapin** 229-231 Church St. PHILADELPHIA

NON-GREENABLE AND INDESTRUCTIBLE
ANILINE BLACK

I offer to large and important establishments a Process for Dyeing FAST BLACK on Hosiery, Cotton Piece Goods, Artificial Silk, Yarn, etc., etc., that is in practical use with leading concerns in this country and is being introduced amongst leading firms in Europe.

Well known specialists, after thorough researches, found the WILD Black ***IRREPROACHABLE,*** the most brilliant color, the most solid and the cheapest.

I PLEDGE MYSELF, THAT IF THE BLACK IN A PRACTICAL WAY, IS NOT SUPERIOR TO AND CHEAPER THAN ANY KNOWN IN THE WORLD, ALL CONTRACTS I SHALL MAKE WILL BE CONSIDERED NULL AND VOID.

We absolutely do away with previous and subsequent (to the Oxydization) manipulations which are usually needed and produce our black in one operation.

CHAS. E. WILD, Lansdowne, Penna.

of the spinners of English spun yarn will be in an unhappy condition. Many of them covered for wool as soon as orders were secured for yarn as they were unwilling to take chances on an uncertain wool market, and though the spinners have in most cases insisted on written contracts, yet if the weavers do not secure orders they can give no spinning instructions and hence the spinner will be worse off than if he had no orders. When the large English spun worsted yarn plant now being built in Lawrence is in operation, this increase in spinning capacity will considerably ease the supply of worsted yarn and many of the spinners will seek new outlets.

The combers are not busy at the present time. The spinners are running notwithstanding the possibilities ahead of them. All depends upon the coming heavy weight season which will have developed in the next report. Prices firm.

We quote:

2/4s Australian	1.28
2/40s Delaine	1.23
2/36s 1/4 to 3/8 Blood	97 1/2-$1.00
2/32s 1/4 Blood	86
2/20s 1/4 Blood	80-85

Woolen Yarn.

Spinners at the present writing are working hard to secure new outlets for yarn and without doubt a good time is ahead of them. The price of worsted yarn is forcing many weavers to substitute woolen spun warps for worsted warps, and there are many inquiries for yarn for the coming heavy weight season, which will develop within a short time. and these orders will be for facing and backing of heavy-weight cloth. Much silk waste is going to be used to give the yarn

WILLIAM B. CHARLES,
Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,
For the Underwear Trade.
AMSTERDAM, N. Y.
Boston Office, 200 Summer St.

JOSEPH M. ADAMS CO.
WOOLEN YARNS,
Carpet Backing and Rug Yarns a Specialty.
ARCOLA MILLS,
Main St., foot of Centre St., Manayunk, Philadelphia.

Knitting and Weaving
YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.
EDWARD S. HYDE,
226 CHESTNUT STREET,
Philadelphia, Pa.

STOP WASTING OIL FROM COMB-BOXES OF CARDS

NON=FLUID OIL

Neither drips on floor nor spatters on card clothing and drawing cans like fluid oils.
One application lasts four or five times longer than fluid oil and keeps boxes cooler.

Free Sample Sent by Paid Express **Write Today**

NEW YORK & NEW JERSEY LUBRICANT CO.,
14-16 Church St., New York City. Department "L"

strength and the cloth brightness. Garnetted thread waste will be used to give the woolen thread a smooth worsted effect, as much of the woolen yarn used will be for imitating worsted yarn and worsted cloth.

The eiderdown manufacturers are well employed at present, also the demand for French flannel is good. The demand for the coming six months will be good for the commission spinners and for sale yarn from the men's wear manufacturers. While the future is certainly satisfactory to spinners of woolen yarn, some of the immediate results are rather discouraging. The overcoating trade, which employs much outside machinery space for woolen yarn, is a failure on account of the warm winter, and some of the largest mills have many looms idle. We know of one mill with 10 sets of cards idle. One of the larger mills, which has been having considerable yarn spun on commission, has recently started a mill with 20 sets of cards and consequently some of the commission spinners are looking for a new outlet.

The hosiery trade is now on cotton goods, the woolen spun yarn not being in demand before April or May. All the spinners are looking forward to a prosperous season for heavy-weight men's wear.

The knitters throughout New York state have placed but few orders for wool or yarn, but as all have been doing a good business, by next April they will be in the market for material and yarn. The knitters believe that much more Australian lambs wool will be used the coming season than was the case last year. Lambs' wool will sell at about the same price as last year, which ranged 76 to 78 cents per pound, carbonized. It was hoped that prices would range at least 2 cents per pound less, but the Australian market has held firm at old prices, and hence importers were unable to buy at less than last year. The knitters state that they do not expect to buy much before April, and it looks as though nearly all of the buying would be late. Thread waste and other grades hold firm, and later many orders will be placed, at prices ranging from 65 to 67 cents per pound. Some of the knitters that have been buying merino yarn for backing will not be on the market this year.

The London wool sales, which closed on January 31, show prices as being well maintained. The next sales open March 13. The spinners are working for orders and the season will develop these orders during the next thirty days. The turn-over will be in new directions,—many of the old outlets having passed new lines will give employment to all machinery space. The two-ply

B. CLÉMENÇON,

European and Asiatic Raw Silks. Wild Silks and Douppions a Specialty.

445 BROOME ST., SILK EXCHANGE BLDG., NEW YORK.

SPUN SILK, SCHAPPE, TUSSAH — Yarns in Stock.

H. de VEER,
260 West Broadway,
(Wool Exchange Building.)
NEW YORK.

TUSSAH WASTE, SILK NOILS, DOUPPION.

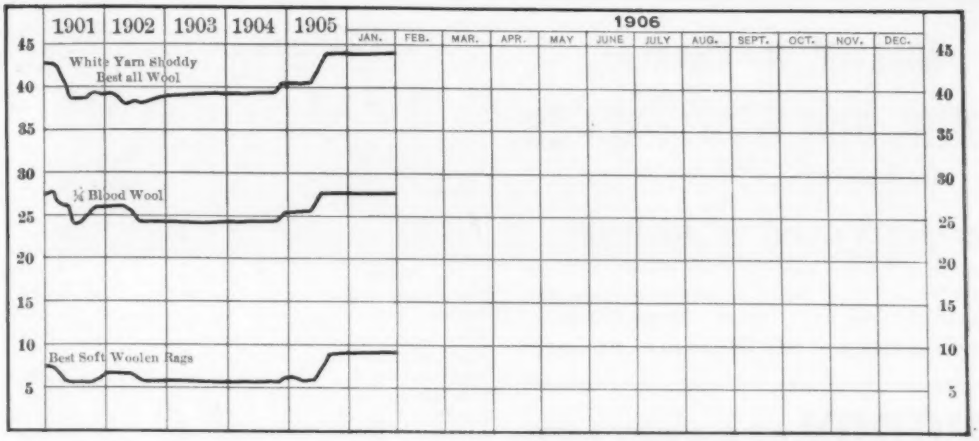

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

yarns and other yarns for sweaters, golf jackets and other fancy articles have developed as never before and there is a good demand for yarn from this direction.

There seems to be a slowness in taking hold, as is always the case after the first of the year. The outlook is good for all lines of underwear and other manufactures, and it is believed that the coming year will be good for all kinds of business.

Rag and Shoddy Market.

The expected improvement in these markets has not yet materialized. Demand is sluggish from both shoddy manufacturers and spinners. Collections of rags have been kept well within the demand, however, which has prevented any accumulations, either in the country or at the large distributing centers. The result is that prices have continued fairly steady and buyers have found it necessary to pay full rates for stock. An encouraging feature is the improved demand for clothing wool, which leads the trade to believe that cheviot effects will soon have an inning, when shoddy will share in the improvement.

Wool waste has been in fairly good demand. The mills are using their own waste to a greater extent than heretofore, which makes it difficult for buyers to find lots for sale. Cotton waste has been dull, with prices inclined to sag under the influence of the raw cotton market.

SHODDIES AND EXTRACTS.

White yarn, best all wool	44-47
White knit, all wool, best fine	35-40
White knit, No. 2	30-35
Light yarn, extra fine	30-35
New pure indigo blue	28-30

Merino.

Fine light, all wool, No. 1	24-27
Medium light, all wool, No. 1	15-17
Medium light, all wool, No. 2	15-17
Fine black, all wool	25-27
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 1	18-20
Medium dark, all wool, No. 2	15-16
Red knit stock, strictly all wool	20-22
Red flannel, all wool	20-22
Dark blue for hosiery, strictly all wool, No. 1	20-22
Dark blue for hosiery, not all wool, No. 2	15-18

WOOLEN RAGS.

Fine merchant tailors, all colors	10-11
Choice light colors	13-14
Browns	12-13
Blacks	9-10
Fine blues, plain	9-10
Fine dark	12-13
Medium dark	7-8

Worsteds.

Blue	16-18
Black	22-24

Serges.

New black	16-18
New blue	15-17

Flannels.

New scarlet	19-20
New blue	15-16
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	9½-10½
Old white flannels	22-23
White flannels, No. 2	11-12
Old red flannels	13½-14
Light blue flannels	7½-8½
Old blue flannels	9½-10
Fine worsteds, new black	
Old plaids	7-8½
White stockings	22-23
White hood stock	22-24
Clear hoods	9-10
Red stockings	

WILLIAM B. CHARLES,
Cotton and Wool Wastes
Amsterdam, N. Y., U. S. A.

COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

Boston Office: 200 Summer Street.

SHODDY WM. H. H. SLACK & BRO., Springfield, Vt.
Carbonized Stock a Specialty. FLOCKS

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.
RIVERDALE WOOLEN CO., MANUFACTURERS OF
.. Shoddies ..
Of every description. Capacity 7,000,000 pounds per annum.
Custom Carbonizing and Garnetting a Speciality.
New York Office. 140 DUANE STREET. RIVERDALE, NORTHBRIDGE, MASS.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y
Established 1866—Incorporated 1893.
THE S. BLAISDELL, JR., CO.,
COTTON, EGYPTIAN PERUVIAN
American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.
CHICOPEE, MASS.
Cotton Waste Purchased on Yearly Contract from Mills.

10 to 35% Increased Output

with no added expense for operation, is the proven result of eight years' use of Warren's Pulley Cover in Textile Mills. It does this by reducing the slipping of belts to a minimum, while allowing them to run slack. It is not sticky, and catches no dust or lint. It is very durable, wearing for several years under ordinary conditions. It costs but 10c. to 12 1/2c. per square foot, according to size of package.
Smallest package, 40 sq.ft., $5.
Regular Case, 125 sq. ft., $12.
IT IS JUST WHAT YOU NEED. ORDER TODAY.
The Warren Co., Manufacturers,
192 Orleans St., Chicago.

Blue stockings	8½-9½
Fancy stockings, No. 1	9½-11
Gray stockings	10½-11
Black stockings	11-12
Knit stock comforters	7-8
Red knit	13½-14
Light gray knit	10½-11
New light fancies	14-15
New fancies	11-12

Merinos.

Light, fine	.16-18
Light, coarse	7½-8½
Fine, dark	13-15
Coarse, dark	7-7½
Blue	11-12
Blue—seamed	
Black—seamed	15-16
New black	18-20
Small	4¼-4¾
Bunting	7½-10

FLOCKS.

Shear, fine white, all wool	.10-12
Fine indigo blue, all wool	7-8
Fine black, and blue, all wool	6-7
Fine dark, all wool	2½-4
Gig, fine, all wool	2-3
No. 1 black, all wool cut	6-10

COTTON WASTE.

No. 1 Spinners	10-10¼
No. 1 Machine	6¼-6½
No. 2 Machine	5-5½
Machine Cop	8-8½
No. 1 Cop	8¾-9
No. 1 Card	8-8½
No. 2 Card	7½-8
No. 1 Oily Card	4½-5
No. 2 Oily Card	3½-4
Peeler Combing	10-10¼
Egyptian Combing	10-10¼
No. 1 Linters	6-6½
No. 2 Linters	5¼-5¾
White Clips	4½-5
Colored Clips	1½-2¼

Why Wool Imports Increase.

Danville, Ky., Jan. 16.—[Special.]—A pack of dogs killed fifty head of fine Southdown sheep in the neighborhood of Perryville last night. Hundreds of others were mangled, injured and so frightened that they are of little worth for further breeding.

Two-thirds of the farmers of Boyle county have signified their intention to give up their most profitable branch of stock raising until relief of some character is assured. T. A. Bradley, a heavy loser from the ravages of dogs, is out in the county, riding day and night, securing signers to a petition which will be presented to the present Legislature asking for the passage of a dog law. Mr. Bradley and other farmers in this community are acting in conjunction with an organization of sheep raisers at Smithfield, in Warren county.

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Manila Rope Drives the Most Economical

In comparing Manila Rope as a factor in power transmission with leather belting, with which it comes in most direct competition, the question of cost is a prominent one.

Under conditions especially favorable to leather belting its cost would be about two and one-half that of Manila Rope to transmit equal power, and although cost of pulleys for a rope drive would be about one-third more than for belting there would still be a good balance to the credit of rope.

This balance increases rapidly with increased power or increased distance between shafts.

In cost of maintenance the advantage of rope is even more marked.

Our booklet on "Rope Driving" covers the subject in a practical way and will be sent to those interested upon application.

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Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs	2.40-2.50
Citric, domestic	38-38½
Oxalic	5-5½
Suphuric, 60 deg., 100 lbs.	1.10-1.20
Muriatic, 18 deg.	1.15-1.25
Tartaric crystals	28-28¼

Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.35-2.40
Alum, lump	1.75-1.85
ground	1.85-1.95
powdered	3.00-3.25
Aqua ammonia, 16 deg.	3¾-4
Ammoniac, sal., gray	6-6½
Borax, bbls.	7¾-8
Brimstone, crude, foreign ton	22.12½-22.62½
Copperas	57½-62½
Cream tartar, crystals	22¼-22¾
Fuller's earth, lump, 100 lbs.	80-85
powdered	80-85
Glauber's salt	40-50
Potash, chlorate, crystals	8½-9½
powdered	8¾-11
carbonate	3¾-4¼
Soda ash, carbonate, 48 per cent.	1.20-1.30
high test	1.00-1.25
Soda, bicarbonate, English	
American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.85-1.90
Sal. English	85-90
Sal. American	60-70
Sulphate, alumina	1-1¾
Vitriol, blue	5¾-6

Dyestuffs.

Acetate of soda	4¼-4½
Acid, picric, best crystals	22-27
tannic, commercial	35-37
Albumen, egg	54-70
blood	20-27
Alizarine, red	15½-16½
Aniline oil	9½-9¾
salt crystals	8½-8¾
Antimony salt, 65 per cent.	14-15
Bichloride of tin, 50 per cent.	10¾
45 per cent.	10¼
Bichromate of potash, American	8¼-8½
Bichromate of soda	6¼-6½
Bisulphate of soda	80-1⅜
Cutch, mat	4½-5
boxes	5-7
Dextrine, imported potato	6½-7½
corn	2.55-2¾
Divi-divi ton	35.00-40.00
Flavine	23-40
Fustic, stick, ton	17-20
young root	31.00-35.00
Gambier	4½-4¾
Hypo. of soda, Am. bbls. cwt.	1.40-1.50
Indigo, Bengal, low grade	52½-55
medium	60-65
high grade	75-85
Kurpah's	47½-60
Gautemala	35-70
Manila	43-45
Madras	42-45
J. (Synthetic)	18-20
Indigotine	95-1.80
Logwood, stick, ton	15.50-16.00
roots	14.50-16.00
Madder, Dutch	7⅞-10½
Muriate of tin, 36 degrees	9-9¼
52 degrees	15-15¼
Nitrate of iron, commercial	1¼-1½
Nutgalls, blue Aleppo	25
Persian berries	7
Phosphate of soda	1.90-2¼
Prussiate of potash, yellow	14-14¼
Quercitron, ton	18.00-20.00
Starch, corn, pearl, bbls.	2-2¾
corn, pearl, bags	1.85-2½
potato	3¾-4
rice	6½-7½
wheat	5-6
Stannate of soda	10-20
Sumac, Sicily, No. 1, ton	47.00-50.00
Sicily, No. 2, ton	44.00-47.00
Tapioca flour	2¼-3½
Tin crystals	22-23½
Tumeric, Madras	4½-4¾
Zinc dust	5¼-6

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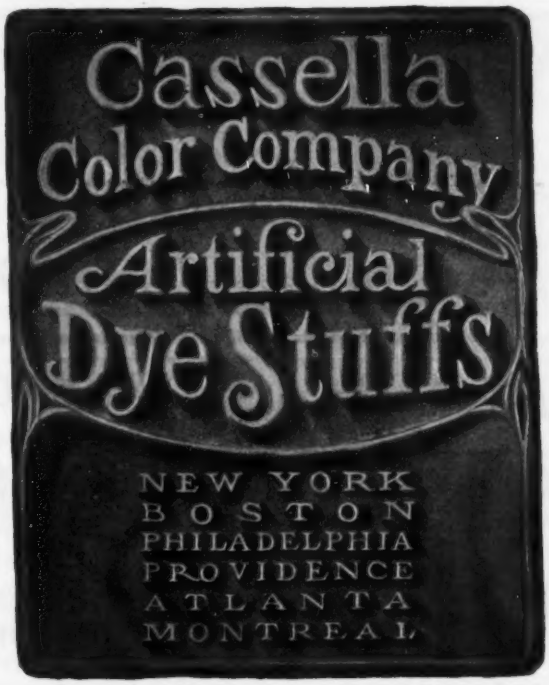
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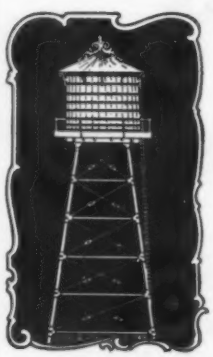

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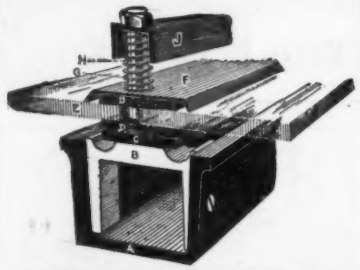

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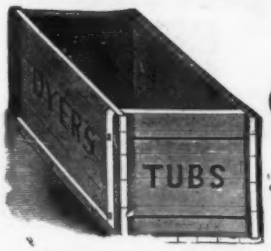

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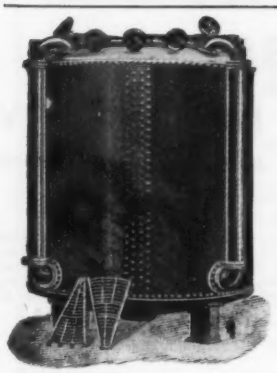

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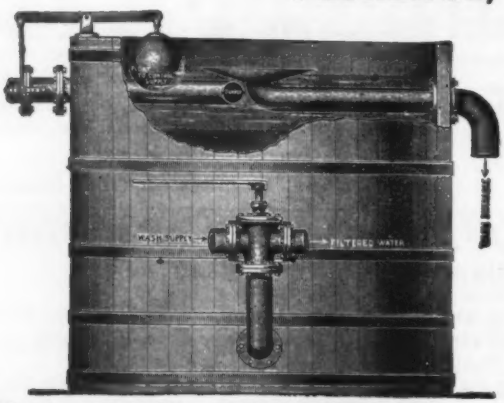

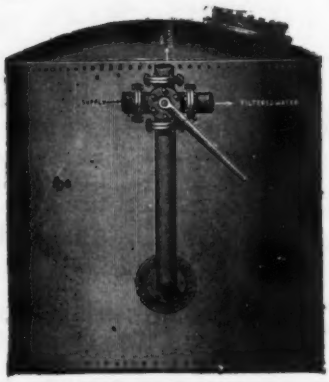

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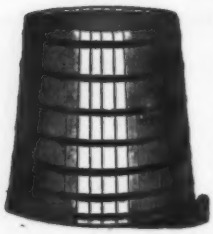

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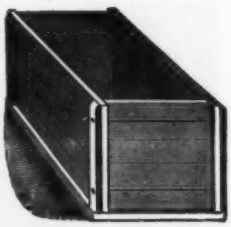

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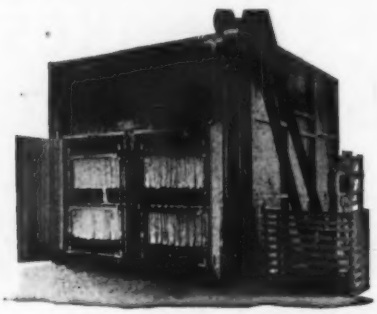

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VACUUM MACHINE.

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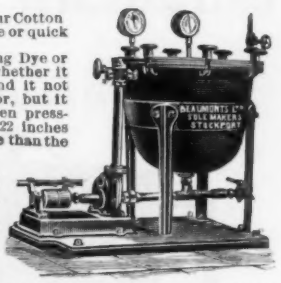
This machine will Dye, Bleach, Size and Scour Cotton Hemp, Woolen, etc., in the form of Cop, Cheese or quick traverse bobbins, any thickness or length.

This Machine will circulate absolutely boiling Dye or Size Liquor through every fibre of the yarn, whether it be cop or cheese which is under treatment, and it not only circulates this boiling Dye or Size Liquor, but it forces it into the fibre of the yarn under an even pressure of 10 lbs., and this is more than equal to 22 inches of vacuum; it is **three times** more effective than the ordinary Cop Dyeing Machinery.



This machine will dye evenly and thoroughly through every fibre of the Cops while the spare Cop plate is being refilled with Cops; **in fact it will do this in six minutes.**

Can be depended upon to dye a perfectly even shade all through the yarn, and will dye the most delicate colors. It will dye silk Cops or treat them with any necessary liquor. It will scour or dye wool tops. It will scour or dye large hemp cops and cheeses. It will scour and dye waste cops. We are the Patentees and Sole Makers.

Machines made of Copper	No. 1.	No. 2.	No. 3	No. 4.
and Brass . . .	£40	£65	£115	£170
Machines made of Iron .	35	50	75	110

We supply Two Sets of Skewers and Two Cop Plates with the Machine, whether it is for Weft Cops, Twist Cops or Cheeses.

BEAUMONT'S LIMITED, Brinksway, Stockport, England.

DON'T READ THIS

unless you are a MANUFACTURER, MILLMAN, or BUSINESS MAN, in which case you would do well to carefully consider the following facts.

The St. Louis & San Francisco R. R., better known as the

FRISCO

has built, or added to its system, over 1900 (nineteen hundred) miles of new railroad during the past five years and all traversing newly-settled sections of the Southwest. **NOW** is the the time to locate your factory or mill in this most prosperous section. It will repay you to write *today* for full particulars regarding inducements offered, abundant raw materials, excellent markets, etc. Illustrated booklet "opportunities" sent free.

M. SCHULTER,
Industrial Commissioner,
FRISCO BUILDING, ST. LOUIS, MO.

THE COHNEN
CENTRIFUGAL
Dyeing Machine

U. S. Patent 776,295, Nov. 29, 1904.

Dyes Raw Stock
or
Yarn in Cops, Skeins or Bundles (Warps)

DYES SULPHUR COLORS
without bronzing or streaking and leaves the stock in perfect condition for carding or weaving.

ONLY ONE HANDLING
is required to dye, oxidize and hydro extract ready for the drying room.

The Machine may be seen in operation by applying to the American Agents.

A. KLIPSTEIN & CO., 122 Pearl St., NEW YORK.

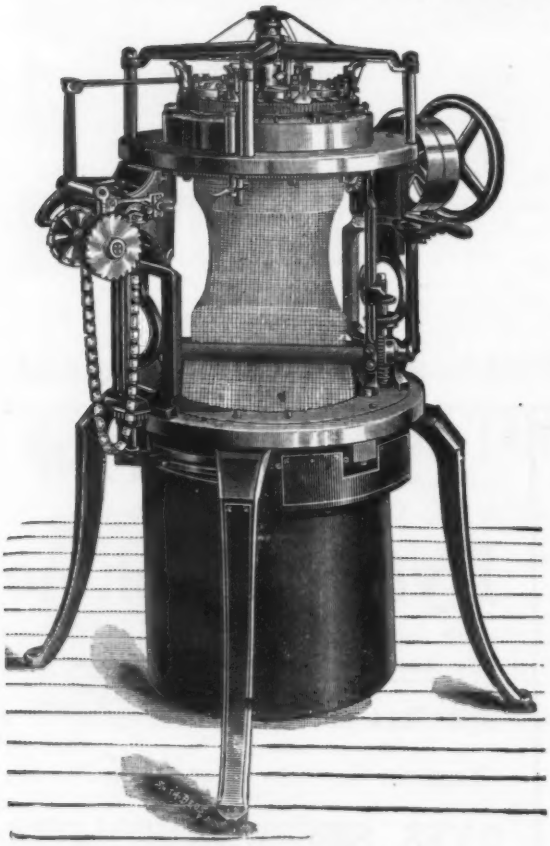
WILDMAN MANUFACTURING COMPANY

(Formerly McMichael & Wildman Mfg. Co.)

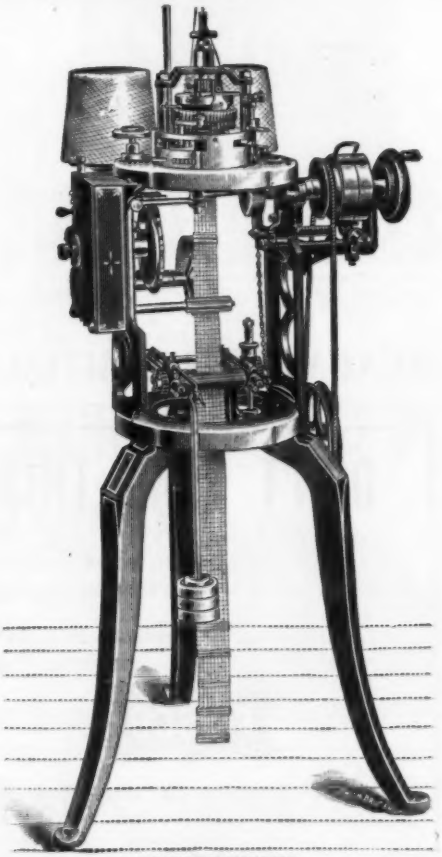
CIRCULAR RIB KNITTING MACHINERY

AUTOMATIC AND PLAIN

For all classes of Ribbed Hosiery and Underwear, Combination Suits, Sweaters, etc.



AUTOMATIC BODY MACHINE.



HOSIERY RIBBER.

ESTABLISHED REPUTATION FOR LARGEST PRODUCTION, BEST QUALITY FABRIC, DURABILITY, ECONOMY OF OPERATION

Full Particulars, Description and Samples Furnished upon Application to the

WILDMAN MFG. CO.

NORRISTOWN. PENN.

FLAT KNITTING MACHINES

Machines with spring needles of superior quality and construction built by

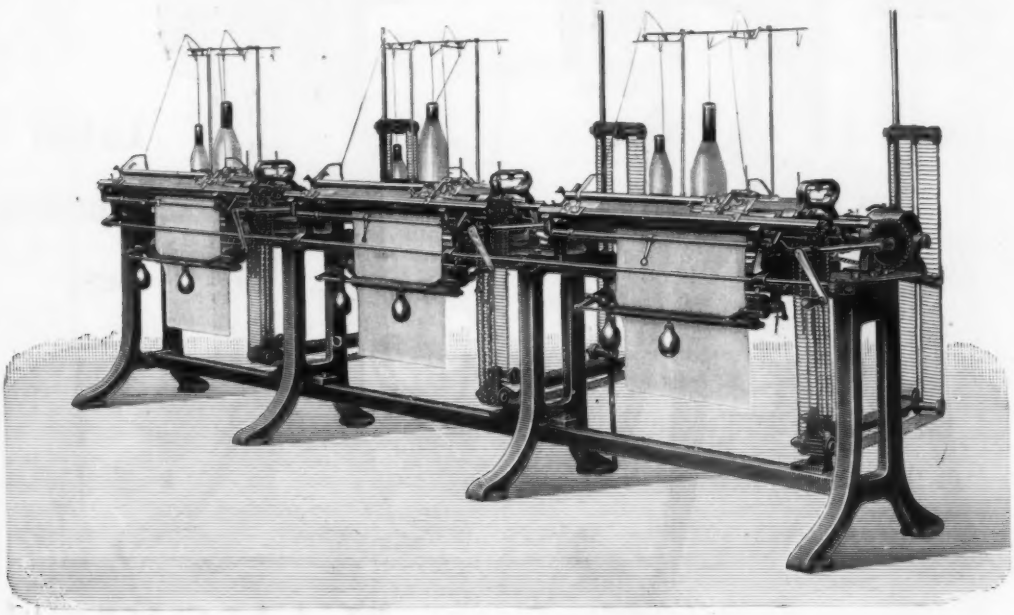
SCHUBERT & SALZER

For the manufacture ot full fashioned hosiery and underwear in cotton, lisle or silk in all gauges, from 14 to 32 needles to one inch, from 12 to 24 sections.

Also machines with latch needles for hand or power motion, built by

SEYFERT & DONNER

For the manufacture of sweaters, cardigan jackets, ladies' blouses, vests gloves, mittens, etc.



This cut represents a Seyfert & Donner full automatic power machine with 3 INDEPENDENT heads, with chain drive. Each head on this stand can have needle beds of different width and gauge.

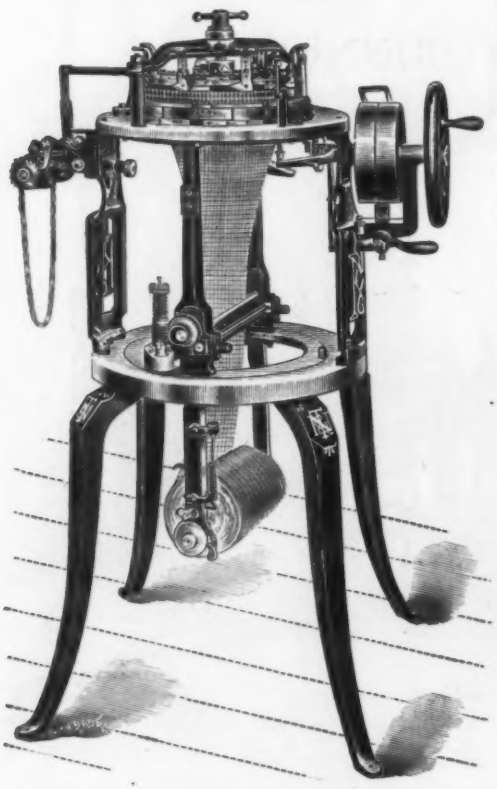
Otto Walther, 507 Bourse, Philadelphia, Pa.

NYE & TREDICK CO.

Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. : ; :

Correct Construction. Excellence and Durability.



LATEST IMPROVEMENTS
QUALITY OF FABRICS AND PRODUCTION
UNEXCELLED

NYE & TREDICK CO.
606 Arch St., PHILADELPHIA, PA.

If You Want

Largest Production For Least Money

Write

Geo. D. Mayo Machine Co.,
Laconia, N. H.

Latest
Simplest
Best

MAYO'S

New Full Automatic Knitter.

PHILADELPHIA OFFICE,
KNICKERBOCKER BLDG., COR. SIXTH AND ARCH STS.,
B. M. DENNEY, REPRESENTATIVE.

Friedberger-Aaron
Mfg. Co.'s

Braids and Laces

The recognized

Standard Finish

for

Trimming Ladies'

RIBBED UNDERWEAR

GERMANTOWN, PHILADELPHIA

P. O. Address, Logan Station.

JAMES TAYLOR,

835 Arch Street, - - - Philadelphia, Penn.

KNITTING MACHINERY

OF ALL KINDS. NEW AND SECOND HAND.

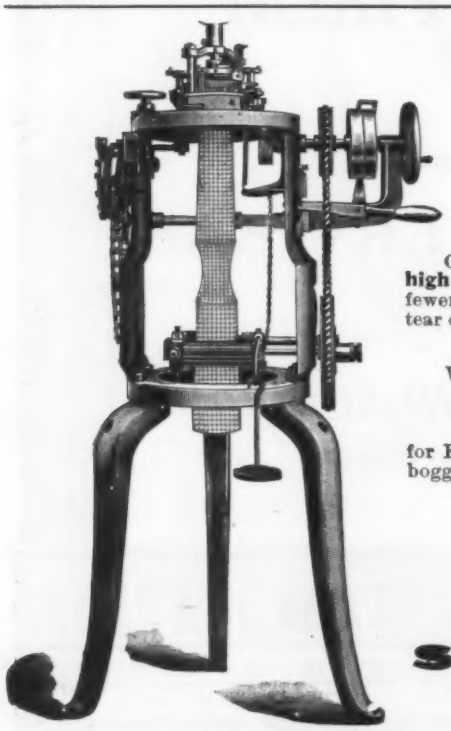
A RARE OPPORTUNITY TO BUY.

500 Payne bobbins.
1 Payne 12 spindle skein winder.
1 Bruce band folder and cutter.
20 Scott & Williams ¾ aut. knitters, 176 needles.
35 Jenckes Invincible 176 n. machines.
1 Weston & Dennis Press, 32x40 in., } 15 Hollow Plates. }
Lot hosiery stamps, boards, etc.
38 Beattie & Hepworth & Abel loopers.
6 Hosiery presses (lever).
14 Lamb and Grosser sweater machines.
200 Ribbed underwear machines, various sizes.
50 Brinton & Co. ¾ aut. knitters, sizes.
24 Standard B machines, 200 and 160 n.
50 Union Special machines, various styles.
1 Rotary fire pump.
100 feet woven rubber hose, 3 inches dia.
33 Mayo machines. Various sizes.
100 Brooks welters.
4 Fleecing machines. (Nappers.)
98 Brinton & Co. and other make hosiery ribbers.
40-Ribbed shirt machine cylinders and dials, all sizes, cuts and makes.
4 Lindsay & Hyde winders.
2 Grosser Jacquard machines for gloves.
1 Cyclone dryer.
2 Typewriters.
5 Band folding and cutting machines.
4 30-inch ventilating fans.
1 Small Water Motor.
1 Small Steam Pump.
1 Small Belt Pump.
15 Rudolph Seaming Machines.
10 Steam Radiators,

WRITE FOR COMPLETE LIST.

APPRAISEMENTS A SPECIALTY.

We are always in the market to buy good second-hand Knitting and Finishing Machinery.



High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at very **high speed**, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

STRIPING AND DESIGNING MACHINES

for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

STAFFORD & HOLT,

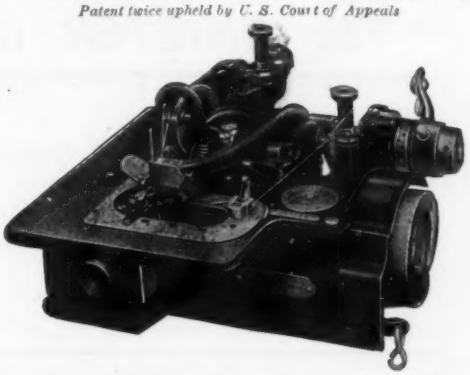
LITTLE FALLS, N. Y.

AN INSTRUMENT OF PRECISION!

"OVERLOCK" MACHINE

(Trade Mark) (Pat. April 5, 1892)

Patent twice upheld by U. S. Court of Appeals



Trade Mark

Business Established in 1859.

For TRIMMING, SEAMING (or Hemming or Overedging) and COVERING Raw Edges of Knit Underwear and Hosiery in **ONE OPERATION** at **3000 Perfect Stitches per Minute.**

WILLCOX & GIBBS SEWING MACHINE CO.,

General Offices: 658 BROADWAY, cor. BOND STREET,

NEW YORK, N. Y.

LONDON PARIS MILAN DRESDEN NOTTINGHAM

THE GROSSER KNITTING MACHINE CO.

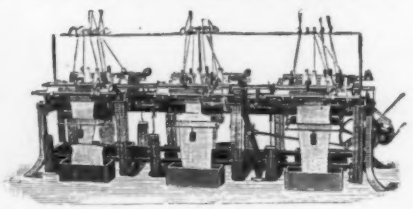
WOOL EXCHANGE Rooms 400-421

MAX NYDEGGER

260 W. Broadway NEW YORK

SPECIAL MACHINES

FOR ANY ARTICLE THAT IS KNIT



GROSSER Flat Knitting Machines

For HAND power or **Fully Automatic Power Machines.** Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.

COTTON PATENT HOSIERY MACHINES

Built by **H. ALBAN LUDWIG, Chemnitz,** for automatic production of **Full Fashioned Hosiery, Fine Half Hose, Ladies' Lace Hose, Fine Underwear;** high speed, large production. All gauges and any number of sections, from 2 to 24.

FRENCH FRAMES

C. TERROT SÖHNE, Cannstatt, Würt, famous builders of the best Circular Frame for **Finest Underwear, Fleece Linings, Gloves, Special à-jour** (open work) **Fabrics, etc.**

RASHEL MACHINES

For Fancy Goods in largest variety, **Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc.,** in silk, wool, cotton.

SPOOLERS, Paraffiners, Finishing Machines, for the knitting business.

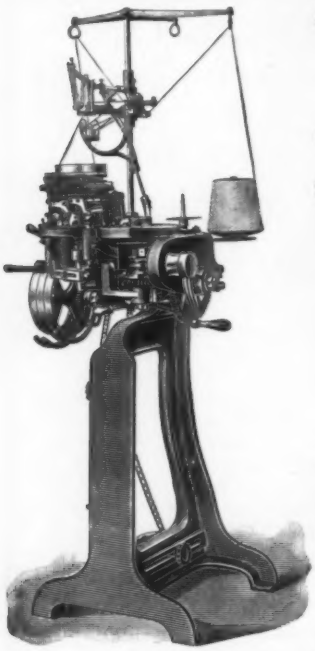
SPECIAL OVERSEAMERS, "Julius Köhler"

Indispensable for Full Fashioned Articles, Sweaters, Hosiery, Gloves, Sporting Goods. **Loopers,** self-cutting and cleaning.

Largest Stock in NEEDLES

For Knitting Machines. Best IMPORTED quality. All parts, accessories, etc, delivered immediately from stock.

Samples, Special Offers, Prices, etc., upon application.



Also Furnished for Bench.

The Invincible

"The KNITTER that KNITS"

THE LARGEST PRODUCER OF PERFECT WORK.

SIMPLE, POSITIVE AND EASY TO OPERATE.

E. JENCKES MFG. CO.

Pawtucket, R. I.

R. M. OATES, Hendersonville, N. C., Southern Representative.

PHILADELPHIA OFFICE, 101 North Sixth St.

The Merrow

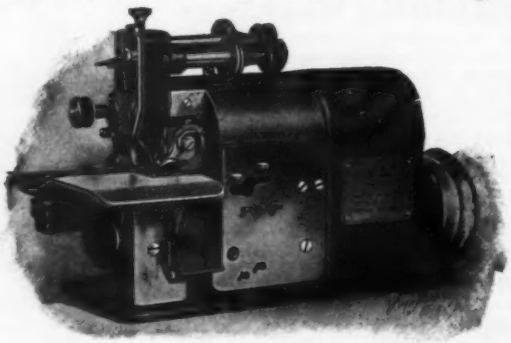
High Speed Overseaming, Overedging and Scallop Stitch Machines

are LIGHT RUNNING, FAST and DURABLE.

OUR NEW STYLE 60 MACHINE for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.

STYLE 35 B SHELL MACHINE

For Necks and Fronts of Rib Goods, produces the most showy, substantial finish.



USE STYLE 17 or 22 for Bed Blankets and STYLE 18 for Horse Blankets.

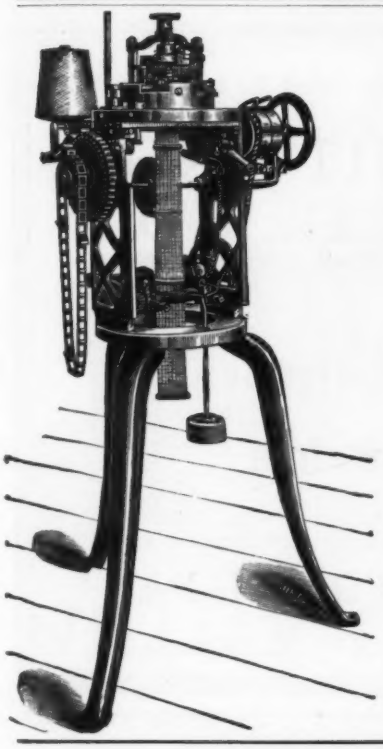
Send for Catalogue and Samples.

THE MERROW MACHINE CO.

Knickerbocker Building, Sixth & Arch Sts., Phila.

HARTFORD, CONN.

346 Broadway, New York



H. Brinton & Co.

213-215 Race Street, Philadelphia, Pa.

BUILDERS OF

Knitting Machinery

For HOSIERY and UNDERWEAR.

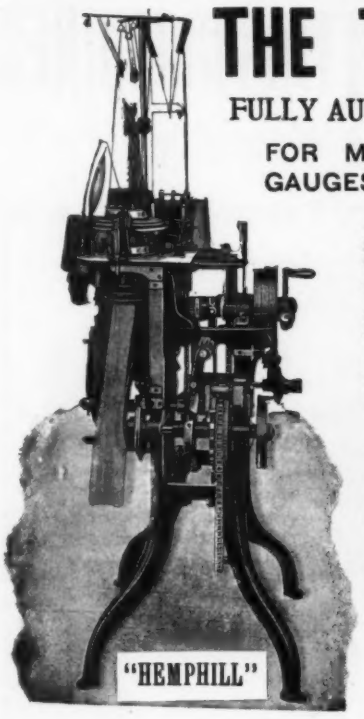
Complete Estimates Furnished. Send for Particulars.

The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.

THE TWO LEADERS

FULLY AUTOMATIC HOSIERY KNITTERS

FOR MAKING ALL KINDS AND GAUGES OF SEAMLESS HOSIERY



One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

Both used and approved by leading hosiery manufacturers.

Both contain all the well-known essentials demanded of first-class knitting machines.

With these two machines we can supply all manufacturers' possible wants in the best possible manner.

Write us for further particulars and prices.

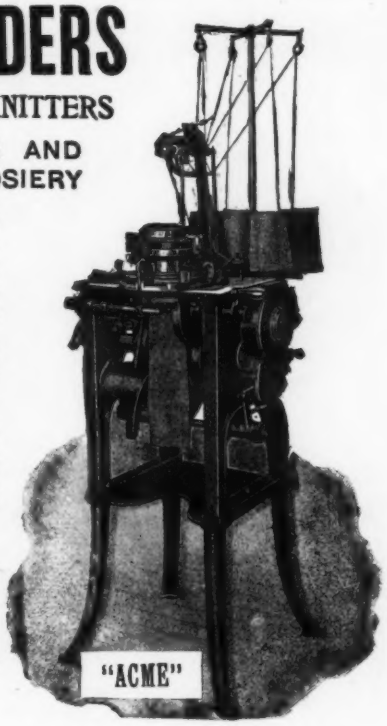
We also make all kinds of **LATCH NEEDLES.** Many leading manufacturers use our needles and say they are the best on the market. Send us a trial order.

MAYO

Knitting - Machine and Needle Co.,

FRANKLIN FALLS, N.H.

Philadelphia Office, Knickerbocker Bldg., Cor. 6th & Arch Sts.



EXCELSIOR KNITTING MACHINE MFG. CO.

BUILDERS OF

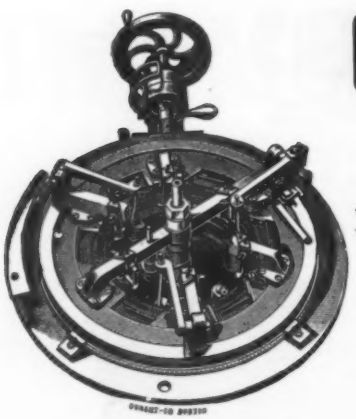
Full Automatic Knitters

WITH OR WITHOUT

Transferring Device

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

MEADOW AND WASHINGTON STREETS ALLENTOWN, PA.

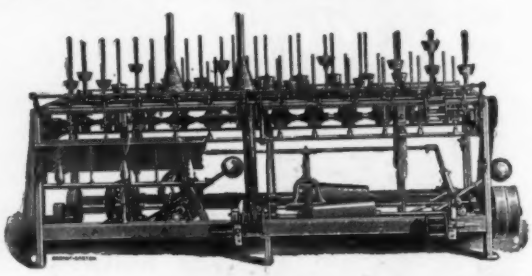


CIRCULAR KNITTING MACHINES

Either plain or full automatic, with stop motions complete. 4 to 24 feeds for

RIBBED UNDERWEAR

Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



ALSO BUILDERS OF THE WELL-KNOWN

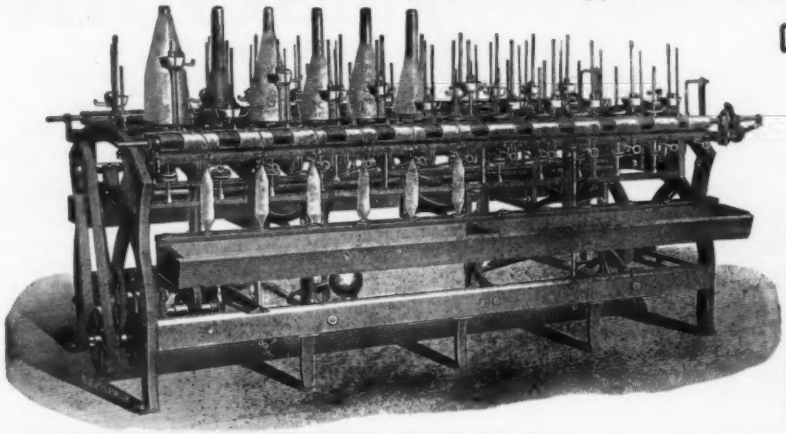
ABEL WINDERS, SEAMERS and LOOPERS.

LEIGHTON MACHINE CO., - Manchester, N. H.

GEO. W. PAYNE, Prest. J. MILTON PAYNE, Treas. CLINTON F. PAYNE, Sec'y.

OVER 1,650 PAYNE WINDERS IN USE

For Hosiery Mfrs., Wind for Cop, Skein or Bobbin.



GEO. W. PAYNE CO.,

[Est. 1865. Inc. 1902.]

Builders of the

Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers, for doubling 2, 3, or more ends into one,

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

OFFICE, 102 BROAD STREET
Pawtucket, R. I.

WILLIAM C. BULL, BENNINGTON, VERMONT.

MAKER OF

For Ladies', Gents', and Children's Goods.

LATEST STYLES.

BEST WORKMANSHIP.

Drying Form Boards

OF EVERY VARIETY.

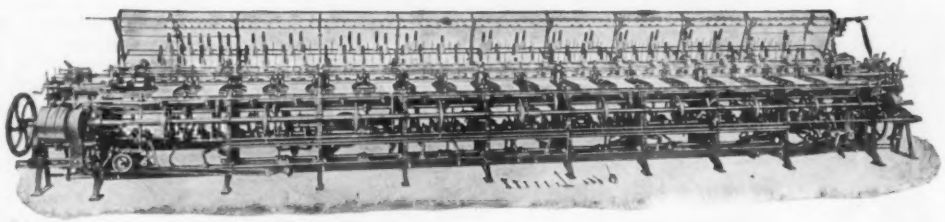
WORKS: CHEMNITZ, SAXONY. Established 1851.

G. HILSCHER

Full-Fashioned Hosiery and Underwear Machine Builder

Sole Agent for United States and Canada

EDWARD W. KOCH, 319 Bourse Building, Philadelphia, Pa.



"Awarded Gold Medal at World's Fair, Paris, 1900,

for highest improvement in the mechanism of manufacturing full-fashioned hosiery, solidity and perfect workmanship in construction and superiority of fabric produced."

SPECIALTIES:

COTTON-HILSCHER HIGH SPEED SYSTEM, 68 courses per minute.

COTTON SYSTEM, for horizontal stripes up to 6 colors, Scotch plaids and vertical stripes, lace through the narrowing, split, etc., etc.

COTTON SYSTEM, wedge heel: this machine manufactures entire full-fashioned ladies hose or half hose and dispenses with the foot machine.

COTTON SYSTEM, newest construction. The new machine knits the entire hose or half hose complete down to the toe, it makes French heels and French feet.

RIB MACHINES: Cotton System, with and without narrowing.

RIB MACHINES: Hilscher System, high construction.

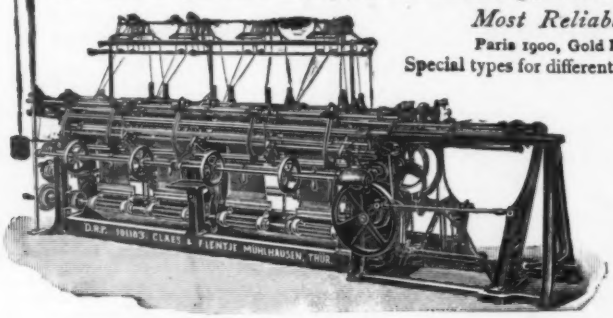
Machines can be seen in operation at above address.

FULL AUTOMATIC

Fashioning-Machine

(Making AUTOMATIC NARROWINGS and WIDENINGS)

For all kinds of plain and ribbed goods as: Seamless Legs, Drawers, Combinations, Sleeves, Suits. Blouses, etc.



Most Reliable and Productive Machine!

Paris 1900, Gold Medal! Paris 1900, Gold Medal!

Special types for different articles. Number of heads to order.

Automatic Sweater Machine

With Independent Heads, Latest Improvements. Recognized as "The Best."

Ask for samples and particulars, state guage and size you need.

Claes & Flentje,

MÜHLHAUSEN, THÜR, GERMANY.

Representatives: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N. Y., where all kinds of hand and power machines can be seen working.

LEWIS JONES,

60½ and Media Streets, . . . PHILADELPHIA.

GAS ENGINES for city or country
BRUSHING MACHINERY
KNITTING MACHINERY

} EFFICIENT DURABLE LOW IN PRICE

CRANE MFG. CO. Lakeport, N. H.

Spring Needle Circular

KNITTING MACHINE.

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

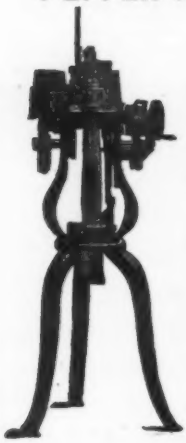
CRANE MFG. CO.

SUCCESSORS TO

PEPPER MACHINE WORKS

Lakeport, N. H.

Manufacturers of



Knitting Machinery,

INCLUDING

Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

Golf and Bicycle Stocking Machines,

ALL KINDS OF

CIRCULAR RIBBED MACHINES

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins. Correspondence Solicited.

The New Improved

Boss 15/16 Automatic

KNITTER

Has no equal for simplicity and durability. It is the only Knitter on the market that gives manufacturers full value for their money, and leaves a swelled bank account. It is fully patented, no royalty to pay; built in sizes from 2½" up to 6"; from 42 up to 220 needles in 3¾" machine. Knits men's, ladies' and children's hose, plain or ribbed. Runs with one single belt. Automatic tension in heel and toe. Send for prices and particulars to

THE BOSS KNITTING MACHINE WORKS,

Cor. Elm and Reed Sts., Reading, Pa.

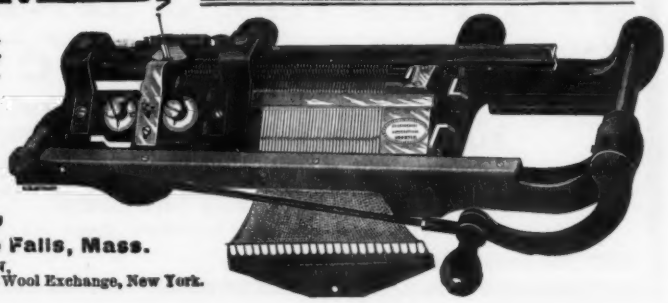
HARDENED STEEL CYLINDERS A SPECIALTY.

The LAMB, LEADER OF KNITTERS,

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.

CIRCULAR MACHINES,
RIB TOP and
SEAMING MACHINES.



LAMB KNITTING MACHINE COMPANY,

P. O. Box 5888, Chicopee Falls, Mass.

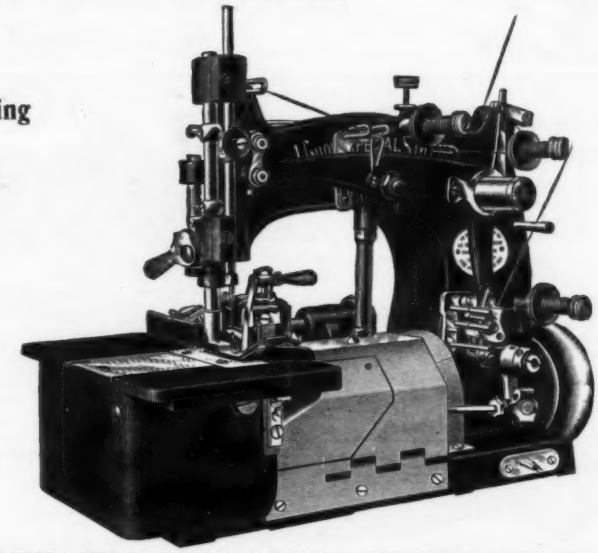
J. E. WOODHEAD, 109 22d St., Chicago.
L. D. SANBORN, Room 505 Wool Exchange, New York.

UNION SPECIAL

Class 15400 Simplicity **Single "Interlock" Machine** High Speed Durability

(TRADE MARK)

Overedge Seaming and Hemming.



Edge-Finishing and Ornamenting

Two or Three Thread Stitch.

Fabrics of Every Kind.

BY INCREASING PRODUCTION OF OPERATORS, THESE MACHINES REDUCE COST. EXPENDITURE FOR UNION SPECIALS ALWAYS MEANS A PROFITABLE INVESTMENT.

UNION SPECIAL MACHINE CO.

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9 Andrews Street, Rochester, N.Y.
Amsterdam, N. Y.
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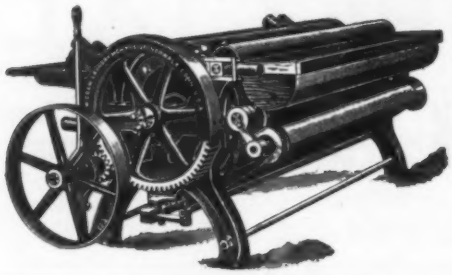

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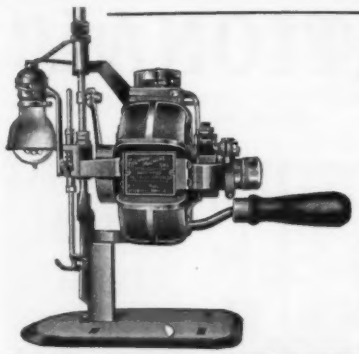

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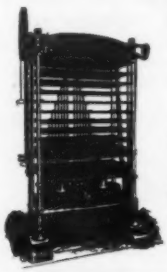

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FOR 1906

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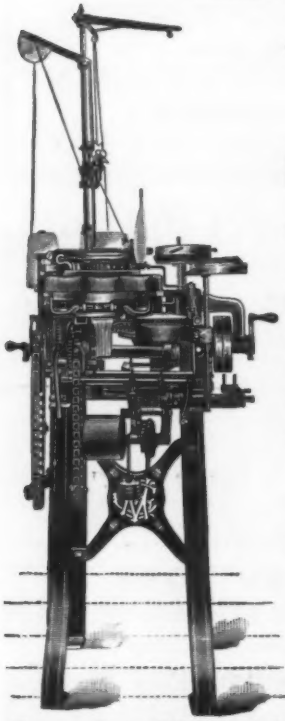

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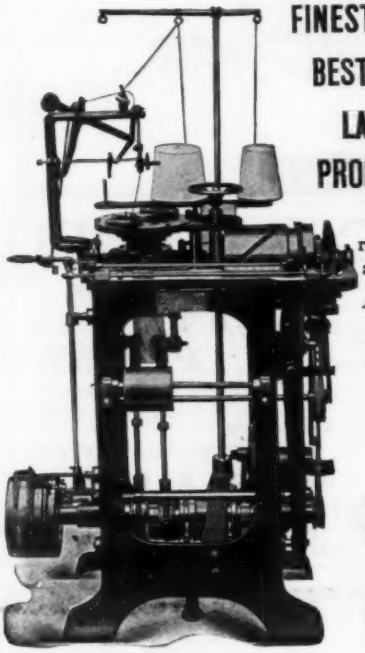

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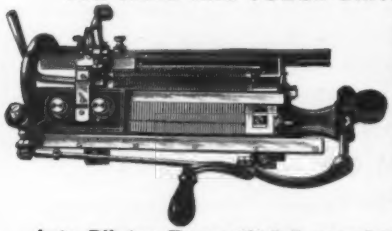

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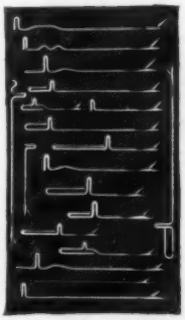

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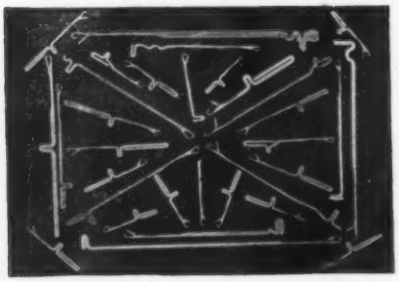

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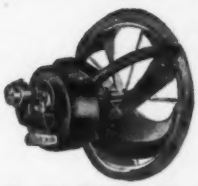

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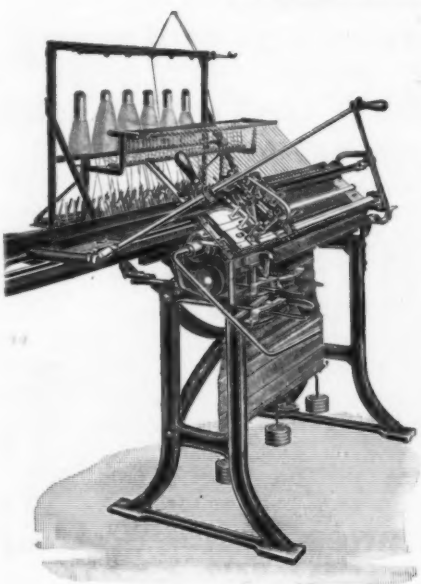

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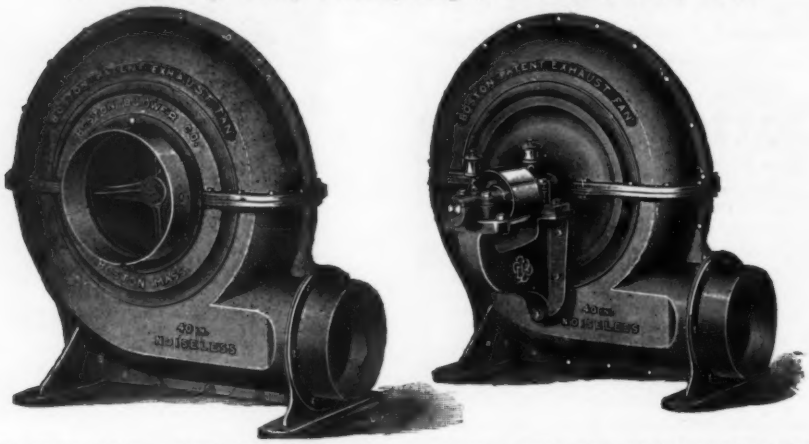

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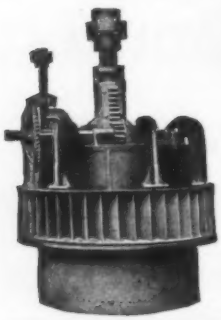

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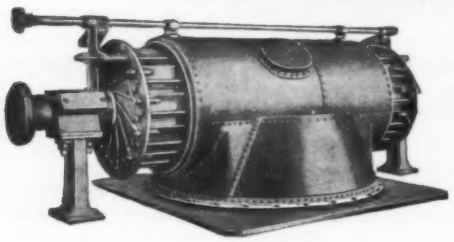

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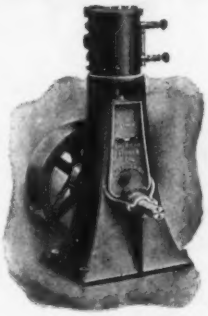

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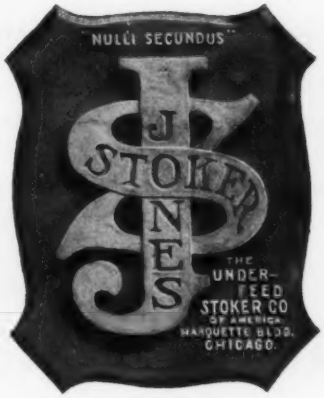

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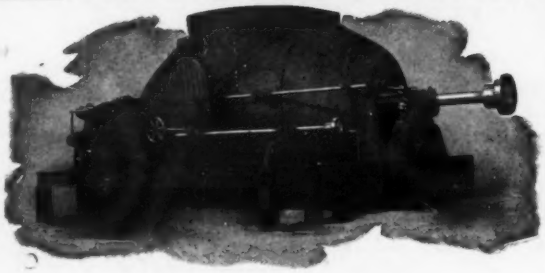

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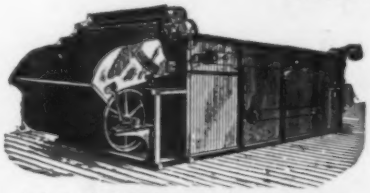

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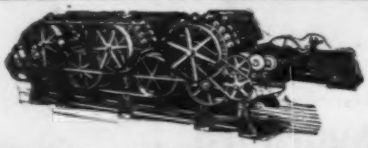

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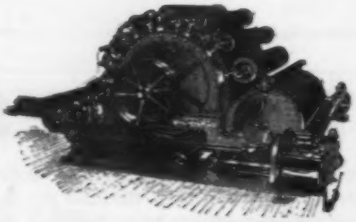

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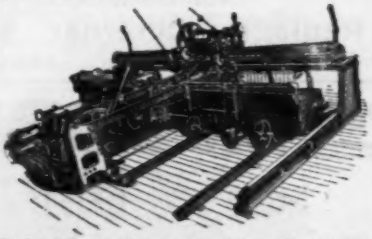

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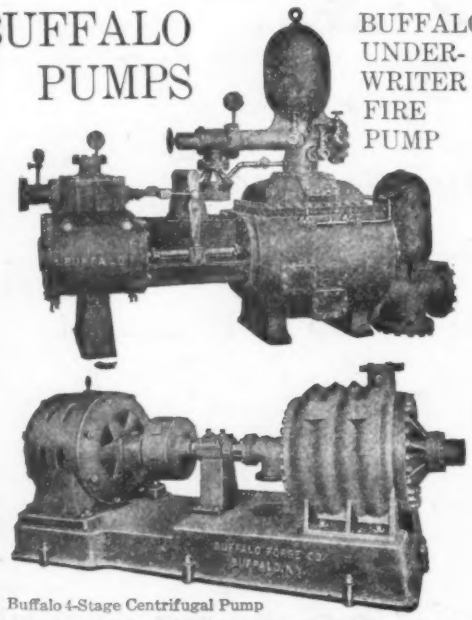

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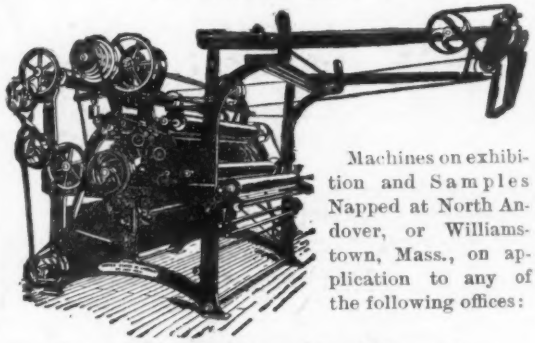

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